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# **Cambridge 2012: Innovation and Impact - Openly Collaborating to Enhance Education**

## ***Conference Proceedings***

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# Support Centre for Open Resources in Education

The Open University

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# Conference Papers

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## A Bridge to Success

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### Abstract

‘Open Learning: Bridge to Success’, a Next Generation Learning Challenges (NGLC) project, is a partnership between The Open University (OU) (UK), Anne Arundel Community College (AACC), the University of Maryland University College (UMUC), and the Massachusetts Institute of Technology (MIT) (USA). The grant has enabled these institutions to capitalise on the success of the OU’s ‘Openings’ content by modifying it for students in the US with the aim of improving retention, learner capability, confidence and motivation through the acquisition of learning skills and core maths (Open University Openings courses, 2012). During a short timeframe (12 months) this has brought about the creation of versatile OER content that has drawn on the expertise of its partner institutions to develop.

The OU’s ‘Openings’ courses have been shown to increase learner capability and confidence, encourage participation, result in student registration on accredited courses and contribute to greater progression and completion. The Bridge to Success (B2S) content aims to allow remediation and practice, accelerate time to completion and open up pathways to skills. Two Openings courses have been adapted for B2S (*Starting with Maths* and *Learning to Change*) and enhanced with activities as the courses are presented online (pre-assessment, diagnostic activities, formative assessments) to engage adults in the learning process. Course units have been presented and developed in the OU’s free, standards-based LabSpace website (LabSpace, 2012) which allows all users to contribute to, edit and initiate material. The content is therefore not only available to targeted students in the US, but anyone browsing or searching the OU’s content.

Pilot institutions in the US have adopted B2S content as the recommended route for preparation to college placement. The piloting process is monitoring, supporting and evaluating the impact of materials within the colleges involved. A program offering support material for adoption by colleges and instructors has been established so that those with no formal connection to B2S can utilise the content.

B2S is contributing to the American Graduation Initiative outlined by President Obama in 2009 which aims for all US citizens to obtain at least one year of post-secondary education or career training. The project expects to exceed its own targets and directly engage with over 3000 students and over 100 educators during the grant period.

### Keywords

Open educational resources, OER, student retention, elearning, mathematics, learning skills,

## **Delivering OER to scale at the OU**

The OU has a long tradition of delivering a diverse range of courses within the higher education curriculum in the UK to a large number of people. It was established in 1969 with the aim of opening up higher education to all, regardless of circumstances, geographical location or qualifications and is currently serving over a quarter of a million students. The OU's OpenLearn website was launched in 2006 to provide a platform for material from OU courses as Open Educational Resources (OER), as well as acting as a hub for the University's free media content (OpenLearn, 2012). Now hosting over 600 units of learning materials, OpenLearn has been shown (McAndrew et al., 2009) to:

- Enhance the OU reputation
- Extend reach
- Contribute to the widening participation agenda
- Allow users to experiment with courses
- Enable the acceleration of technologies
- Be a catalyst for collaboration
- Act as a research base in OER
- Provide a means for recruiting of students

One of the three key elements of the OpenLearn website is the OU's LabSpace, an area that allows sharing and reuse of educational content. Using LabSpace to host the B2S courses enabled project partners to work collaboratively in shaping the content for a US audience, embellish the courses with assessment tools and provide a social media element (LabSpace B2S content, 2012). The content follows the OU's XML schema, which can then be rendered in different formats for example each unit of the B2S courses can be rendered as an ebook or Word document that is created and downloaded onto the user's device, or a printable HTML version combining different sections. Any videos created by the OU are also included in the resulting file (embedded YouTube videos are not) to ensure it is as dynamic a learning experience as the online version. The process provides students with a portable ebook or Word document that can be read offline.

As LabSpace is open to any user the B2S content is not only available to targeted students in the US, but also to anyone browsing or searching the content worldwide.

## **The B2S content**

In the US, approximately 60% of first-year college students are required to take at least one developmental course, yet less than 25% of community college students who enroll in a developmental course earn a certificate or degree within eight years of enrollment (Bailey, T. and Cho, S., 2010). These statistics make student readiness for college a matter of great concern. At the same time, the impact of the Internet and online access have changed the way we interact and gain information, including the way learners choose to learn.

In order to help bridge the gap of student readiness, the B2S project has focused around two key subject areas: maths and learning skills. The courses were adapted from the OU's 'Learning to Change' and 'Starting with Maths' Openings courses. The OU's Openings courses are designed to develop study skills and build confidence around a number of core subjects. They have been shown to increase learner capability, encourage participation, result in registration in credit courses and contribute to greater progression and completion. As the OU primarily focuses on delivering higher education in the UK, the Openings courses translate well in the project's aim to support first-year college and university students in the US who have little or no previous academic qualifications.

The focus of the maths course is to strengthen students' core maths skills and general understanding of maths, thus better enabling them to move into college-level courses and complete a certificate or degree. In the opening unit of the now renamed *Succeed With Math* course we ask the following questions, which gives some insight into the flavour of the course and optimism and confidence it endeavours to impart:

1. *Were you somewhat traumatized by math in your previous education? Are you convinced that you can never understand it? Well, you can! We are all “hard-wired” at birth to do math. If some of your wiring doesn’t work as well as it could because of your previous experience, then this is the place for you.*
2. *Were you just bored with math previously? Couldn’t see the point? Succeed with Math is full of very practical examples that you’ll be able to use in real life.*
3. *Are you rusty in math and need to brush up? In Succeed with Math, you’ll be able to explore exactly those areas you’d like to review, skipping or skimming the parts you don’t need.*

(Succeed with Math, 2012)

Equally, in the opening unit of the renamed *Learning to Learn* course, students are presented with the following: *Learning to Learn helps you think about what you can do already. It then uses this to build your confidence in your abilities. The course uses a mixture of personal reflection, examples (including three real-life case studies), and ideas about how we learn. This combination equips you to move your life forward* (Learning to Learn, 2012).

### **The B2S pilots**

The B2S content is currently being introduced in pilot programmes throughout the US in mixed learning environments: face-to-face instructor-led, online instructor-led (open labs with a self-paced format) and a hybrid of the two. As well as two of the project's partner institutions offering Learning to Learn and Succeed with Math (UMUC and AACC), there are currently 12 other institutions piloting the B2S content in Maryland State to an expected 2000 students.

They are piloting the course content in a number of ways:

- Added-value course material in addition to the already existing credit and continuing education curricula.
- Standalone course material offered in formal and informal class settings to support students identified as needing developmental maths and reading courses.
- Incorporated into student success and retention initiatives e.g. academic success courses, first-year programmes for at-risk students.
- Utilisation through online tutoring programs accessed via statewide library systems and formal tutoring programs.
- Incorporation into course curriculum with Adult Basic Education Programs and Workforce Development Programs to support movement toward vocational and preparatory GED/High School Diplomas.

The B2S project is assessing student access, use and effectiveness of content. Each student is assessed using a pre- and post-questionnaire to determine their level of growth and by targeting identified students we will track the impact on individual student enrollment and retention. In addition the instructors and facilitators of the pilot programs evaluate the course content, solicit student feedback, and observe mastery level of subject matter by their student participants.

The pilots bring use of B2S material to specific student populations and so provide a good opportunity for researching the way in which the content can be used. As open courses they can also be used by anybody without registration. Such use cannot be tracked in such detail

however it is still possible to understand overall behavior through analytics and visible participation in online activities and voluntary completion of assessments. At this early stage of the project there are already indications of the material spreading with approximately 30% of access to the materials outside the US,

The use of OER to support instruction is a relatively new approach for many instructors and institutions. B2S provides not only OER themselves but also promotes the use and potential of high quality OER. Along with other projects funded by in the US by NGLC showing success, this indicates that OER will be part of the landscape of the future in two- and four-year institutions in the US

### **Adapting UK content for US students**

In order to localise British courses and to bring them in to line with the US curriculum, the project team had to make a number of modifications to the content:

1. Americanising text and grammar
2. Localising examples and case studies
3. Embellishing what was previously text-based content with visual and audiovisual media to improve the elearning experience
4. Restructuring the content into easy-to-read chunks
5. Adding formative assessment exercises to:
  - encourage self-reflection
  - allow instructors to view students' progress, and
  - for the B2S researchers, to examine progression through the content.

The content has been more heavily modularised than it was when presented on paper and enhanced with activities (pre-assessment diagnostic activities, formative and post assessments) to engage adults in the learning process.

Learning to Learn encourages students to consider personal change through reading, reflecting and synthesising their understanding of the course content. Some of the activities encourage them to develop a deeper understanding of the concepts presented. Students are asked to write down their thoughts after reviewing the written material or the video material. A 'learning journal' can be created as they progress through the course to maintain a history of their written responses.

The design philosophy behind Succeed with Math is that maths, as well as being a fascinating subject, underpins practically every aspect of modern life. The online course includes case studies, activities, puzzles and historical snapshots as well as mention of more modern developments. There are also audio and video clips, online maths games and quizzes. Two learning tools specific to this course are 'Pencasts' (animated PDF files) and an online calculator.

### **Ensuring quality and accessibility after adaptation**

Whilst both courses were Americanised, most of the localising and embellishment to make the courses into an online endeavour were directed at *Succeed with Math*. In making the content fully available online, particular attention was also paid to the accessibility of the course. Evaluations were undertaken by the Institute of Educational Technology (IET) at the OU and form part of core business for the Institute as part of their quality assurance commitment to the University. Evaluations are conducted in order to:

- Uncover learning difficulties that students are likely to encounter related to the form and content of online materials



- Identify which (if any) features of the course are causing difficulty and suggest the reason(s)
- Suggest how these might be changed to support students more effectively
- Identify elements or features that work well and should stay the same
- Examine the time it takes to complete activities as for some students the time they are online is not the time they are working on the materials
- Understand skill acquisition when and if this has occurred in the course.

Three separate evaluation activities were undertaken by IET on the B2S material:

1. Expert evaluation of the usability and accessibility of the courses in LabSpace, the recommendations from which resulted in a number of changes across the technical infrastructure of the website to improve it for all projects. Educational materials produced by the OU in the UK comply with British standards of accessibility; the B2S material also needed to comply with ADA standards (Americans with Disabilities Act).
2. Developmental testing of the Succeed with Math materials (at time of writing, this activity is in progress).
3. A 'Learning Design' assessment of converted materials.

These are explained in the table below.

**Table2. Evaluation activities: process and recommendations**

<b>Evaluation</b>	<b>Process</b>	<b>Recommendation(s)</b>
Expert evaluation of the usability and accessibility of <i>Learning to Learn</i>	Expert evaluation gives very rapid and experienced feedback. It is undertaken by someone who is experienced in HCI (Human Computer Interaction) and includes the use of different software that disabled students may use in their studies e.g. JAWS, Dragon Naturally Speaking and Read and Write Gold. Usability and accessibility experts looked at <i>Learning to Learn</i> from the general student perspective.	For usability recommendations, these ranged from improving font colours and text size, to text alignment, navigation and style issues. For accessibility recommendations, these ranged from improving the HTML editor (used to receive student feedback) and background styles to use of italics and image descriptions.
Developmental testing of <i>Succeed with Math</i>	Developmental testing provides more in-depth interpretations of how learners are responding to materials and insights into how materials might be changed using a mixture of qualitative research methods. For B2S, the <i>Succeed with Math</i> course is being assessed unit by unit using students from a pilot running at AACC. Every fortnight, students are being asked to complete a short survey. If follow-up interviews are required, these will take place at the end of the pilot.	Developmental testing is still in progress.
Learning Design analysis	This application to the course design process has been a focus of a number of research projects at the OU in recent years and draws on the increasing creation of courses as elearning material. For course designers, bringing elearning into their courses has made the process more complex (Cross, S. 2009). The Learning Design assessment of the <i>Learning to Learn</i> and <i>Succeed with Maths</i> courses was undertaken early on in the	Key recommendations of the Learning Design analysis focused on the embellishment of the course content to ensure that student motivation, reflection on learning and progression were maintained throughout the courses and to especially consider that some students would be studying without face-to-face tutor guidance.

	project to inform the remake design process and to make it easier to see how the new online version should interpret and integrate key aspects of the original course. The Openings courses were not only provided as text-based endeavours with online components, but with personal tutor support.	A further Learning Design analysis of the two courses is currently underway to examine how they have changed after adaptation.
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The developmental testing of *Succeed with Math* described above overlaps with the research strand of the B2S project. Research is an important element in B2S addressing themes of content adaptation, use of social media, pilots and institutional use, analytics and metrics, project team reflections, the student experience, and the student outcomes. These themes will be reported in a series of reports from B2S as it moves from the stages of content revision and production to piloting and data gathering.

### **Instructional support (educators and students)**

The content can be made available as a course to students who have registered for a credit or continuing education course. The content can be customized and delivered within an institution's learning management system (such as Blackboard and Desire2Learn) or can be accessed directly from the Bridge to Success website (B2S project website, 2012). All of the content (or specific modules) can be used to support a first-year experience program, a jumpstart program, or other programs designed to promote student success and retention at two- and four-year institutions. The content can be made available to students enrolled in specific courses during a class on campus, in a computer lab or online (or assigned as homework). Information about these resources can be distributed to high school seniors or prospective students at orientation sessions, by advisors, in testing/tutoring centers, on a college's website or schedule of classes or by other means to promote the use of these materials. All instructors are provided with an Instructor's Toolkit which explains the background to the project, the specific elements of each course, how it is structured and use of forums and quizzes (Bridge to Success Instructor Toolkit, 2012). Equally, students also have access to a Student's Toolkit which is designed to do the same thing but from the student's perspective (Learning to Learn Toolkit, 2012).

To support the adoption and use of B2S content, a professional development series has been developed for educators and adopting institutions. The webinars (and other professional development opportunities) promote the best practice use of OER. The webinars are designed to showcase best practices for teaching at-risk students and to promote student success initiatives at two- and four-year institutions. These webinars are free and open to all (Bridge to Success webinars, 2012).

### **Conclusion**

Developing the B2S material has been a very positive experience demonstrating how open content can provide a good basis for collaboration. In initial stages content could be demonstrated, editing processes transferred and changes made on an equal basis. Once the content was released we have seen great enthusiasm for the piloting process with innovations in use rapidly transferring between partners and pilot sites.

We are now starting to gather direct feedback from learners that we hope will enable us to confirm the value of open courses in supporting the transition into higher education and supporting those who might struggle with existing approaches. Research is important to provide evidence and models of ways to use open content and build on the great interest in the B2S courses.

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# **A Business Model Approach for OER in Open Universities**

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## **Abstract**

For some time the Open Universiteit in the Netherlands (OUNL) has been positioning itself as the university for lifelong learners. This includes amongst others a policy of developing and using Open Educational Resources (OER). One of the aims of this OER policy is to give lifelong learners free and open access to learning materials, publications and tools of OUNL.

This free and open access to the resources of OUNL has (direct and indirect) consequences for the business model of OUNL. With 'business model' we mean the (conceptual) model showing what a company or organization does for whom at what price, and how the business is equipped for that. In this paper we will discuss implications for the business model of OUNL which also may apply to other open universities embracing an OER approach. We will do this by considering three scenarios.

The most radical scenario is a model in which all learning materials will be made available as OER. In this '100% OER' scenario the business model is entirely based on additional learning services to be paid for. Another scenario is to continue the current model, in which OER plays a minor role, in the form of short courses in a marketing driven approach. In an intermediate ('10% OER') scenario OER plays a more significant but still modest role, the business model being based on a substantial share of learning materials still to be paid for plus additional paid learning services.

We will present the results of two surveys of preferences of (potential) lifelong learners for these three scenarios. The first survey was conducted among a representative sample of the Dutch population. The second survey took place under OUNL students. The results are supportive of the 100% OER scenario and thus relevant and encouraging for the open universities who are generally in a deep search for a sustainable OER approach.

## **Keywords**

Openness, Open University, Open Education, business model, sustainable OER.

## **1. Introduction**

Openness has always been at the heart of open universities. These universities have been set up to relax traditional barriers to entry, study and success in higher education such as location, time, pace and required pre-qualification so that more people have access to higher education. The OER wave has brought an additional dimension to this openness: free access to educational resources and also free use and re-use. But what does this mean for the business model of open universities? With 'business model' we mean the (conceptual) model showing what an organization does for whom at what price, and how its business is equipped for that. Will OER for open universities lead to less students and less revenue? Will the principal funding stakeholder (i.e. the government) be willing to compensate for loss of revenue? Is it possible to generate new revenue streams by for instance certification of people engaged in a more informal mode of open learning?

Until now, the number of studies into the economics of OER practices of (higher) educational institutions is rather small. There is an emerging business model for open access publishers, and for open repositories. There is evidence on open textbooks, which have proved to be

competitive alternatives to traditional textbooks for their cost and accessibility benefits (Hilton and Wiley, 2010). OER are also often cited for increasing academic quality while at the same time making high quality educational resources freely available to the community (Lane, 2008).

The OpenCourseWare project has not altered drastically the core businesses of Massachusetts Institute of Technology (MIT). In fact, the OCW initiative has not only raised the already very elevated standing of MIT in the world, it has also been economically beneficial to the institute. OCW is an example of opening education that has enhanced the competitive edge of MIT (Carson, 2009).

There is also evidence through an experiment at Brigham Young University where for a selected number of programmes the learning materials were made openly available. Often it is suggested that the enrolment of fee-paying students will drop when the learning materials are freely available. Johansen and Wiley (2010) showed, however, that there was no significant impact on paid enrolment. Actually there was a slight, but statistically insignificant, increase in enrolment in the programmes. An evaluative study of the Open Learn project of the Open University (UK) showed that this OER project was a strong enabling device that let the OU UK move towards a variety of benefits such as stronger public and academic profiles, improved opportunities for public engagement and more effective engagement with subject communities (McAndrew et al., 2009).

The challenges posed by OER to an open university such as OUNL in terms of the business model are going beyond the challenges for the regular universities. For an open university, giving free access to its educational resources could imply a more disruptive innovation than it is for regular universities. Traditionally educational resources have been core asset of the business models of open universities. They are meant for independent learners and often are based on interactive pedagogical models aimed at self-initiated and self-directed learning. Giving free access to these learning materials could mean giving away the crown jewels.

## **2. OER and the Open Universiteit in the Netherlands**

Since its start in 1984, OUNL has positioned itself as a university for lifelong learners. "Open" in its name refers to open admission (no thresholds regarding prior education) and freedom in time, pace and place (learning whenever and wherever the student is able to), as well as openness towards programming and a wide variety in its student population. This six-fold classical openness (Mulder, 2010) indeed sets the right conditions for lifelong learners who generally have to fit their study plans in a busy schedule of working, being part of a family and leisure time.

The educational model of OUNL is characterized by:

- supported open learning
- carried by high-quality learning materials
- developed for independent learning
- integrated with didactics and tutoring elements.

Meanwhile open universities are considering ways of fruitfully combining the classical openness with the new digital openness (Mulder, 2011), which stands for free online availability of:

- software (Open Source)
- scientific output (Open Access)
- creative output (Open Content)

- learning materials (Open Educational Resources / OER).

Of these OER is the most prominent in touching the business model kernel of open universities, offering powerful prospects hand-in-hand with entering a possibly risky adventure. As the first Dutch university OUNL initiated such an adventure in 2006 by experimenting with a base of 25 high-quality short courses for independent learners in OER through the so-called OpenER project (Schuwer and Mulder, 2008). After this successful experiment a cautious but steady step-by-step institutional OER strategy was designed. The basic idea is to position OUNL as a frontrunner on OER in the Netherlands by offering part of OUNL's learning materials for free. Aim is to generate increasing enrolment and higher revenue by better addressing the needs of the existing target groups and attracting new target groups, especially among lifelong learners. The OER concept was complemented with the concept of Open Learning Services (OLS), which are free to use or to be paid for (Mulder, 2011), and include a variety of online / virtual (but also onsite / physical) facilities like:

- tutoring and advice
- meetings, seminars and lectures
- communities, social interaction and teamwork
- testing and examination
- consulting knowledge sources
- internet navigation.

To find out what the probable effects of a business model based on OER on both the revenue streams and the internal processes would be, a pilot project has been started in 2010 called OpenU (<http://portal.ou.nl/en/home>). For a short introduction, see <http://t.co/P5vfaRt>). In this project real-life large-scale experiments are conducted within two knowledge domains. Part of their learning materials are being offered as OER and in addition OLS are provided, partly free but for the main part to be paid for by subscription.

Parallel to OpenU a research project was set up in order to study different aspects regarding the business model of OUNL with OER included. Part of this project was a survey of the (probable) behavior of people in taking courses at OUNL in a situation where parts of or all learning materials of OUNL will be available as OER. The survey was commissioned by OUNL to CentERdata, a research institute of Tilburg University

In this paper we will discuss this survey. In the following section we will describe the research methodology. Then we will outline three OER scenarios which have been the object of the survey. In section 5 the main findings will be presented. The paper ends with a major conclusion.

### **3. Research methodology**

There is no real evidence yet with regard to actual choices (revealed preferences) people make when an open university has switched to OER. In such a situation one could use the so-called stated preference method, a probabilistic research technique by which decisions of individuals in particular contexts can be predicted (Louvière et al., 2000). People are asked to state their preferences and values rather than inferring their preferences and values from actual choices. In this survey this stated preference technique has been used and individuals have been asked to make trade-offs amongst different alternative educational offerings, all based on OER. From these trade-offs their willingness to register for and to pay for the open education of OUNL can be estimated.

Each individual respondent was offered six different alternative sets. Each alternative set consisted of two hypothetical cases of OER-based educational offerings differing in only one variable such as the price or mode of guidance. Each time the respondent was asked to state his/her preference. Furthermore, the respondent was asked whether s/he would actually take the course of his/her preference or not.

The survey was conducted for two populations: a representative sample of the Dutch population (800 with a response of 464 (58%)), and a sample of current OUNL students (3594 with a response of 407 (11%)). The samples were divided into three age groups:

- < 26 years ('regular students', young)
- 26 - 50 years ('lifelong learners', middle-age)
- > 50 years ('fun students', old).

The response was equally divided among the three groups.

The goal of the two surveys was to find out whether OER would affect the preferences of individuals to enroll in OUNL courses, and if so to what extent. Furthermore, we would like to know which variables influence these preferences.

The main question was the following:

*What will be the effects of combinations of*

- *OER,*
- *additional services,*
- *level of services, and*
- *variations in pricing*

*on the preferences of (potential) students in terms of (paid) enrolment?*

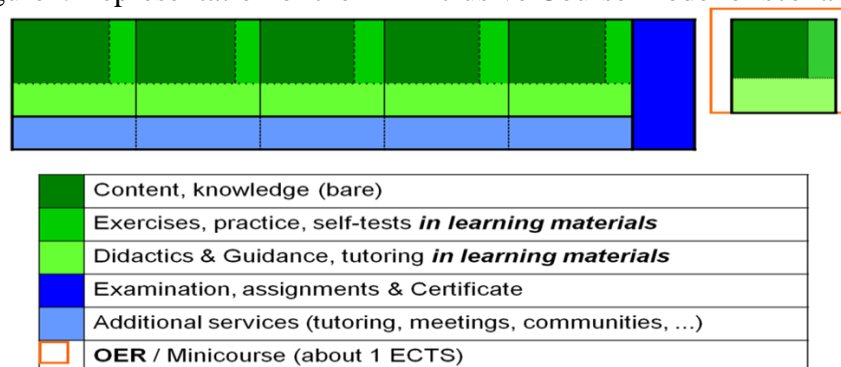
#### 4. Three scenarios

The alternative educational offerings which were presented to (potential) students, have been based on three different scenarios. They differ with regard to the percentage in which OER is part of the offering. This percentage ranges from exemplary via 10% to 100%.

##### Scenario 1: current scenario (exemplary OER)

The current scenario is characterized by offering some minicourses as OER, each about 25 hours of study. Some of these minicourses are derivatives from a regular 100 or 200 hours course and some are especially designed to be offered as OER. This situation is schematically presented in figure 1. The OER offering is "all-inclusive", meaning that content as well as exercises and didactics are part of the learning materials. We will refer to it as the All-Inclusive Course Model (Mulder, 2011).

Figure1. Representation of the All-Inclusive Course Model of scenario 1

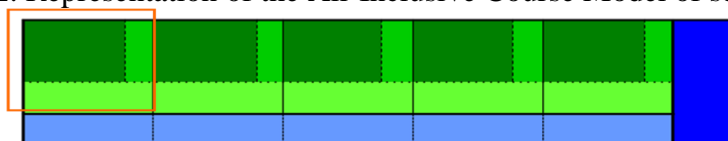


In figure 1 a course is represented as a set of units, each consisting of content, exercises and tests, and didactics and guidance, all in green and all incorporated in the learning materials. Besides the course goes with services as well (in blue). Except for the OER minicourse all course components, learning materials and services, have to be paid for.

### Scenario 2: 10% scenario

In the second scenario an average of 10% of each course is offered as OER. Compared to the first scenario all OER is derived from regular courses in order to minimize the amount of re-work to be done. The OER part is still following the All-Inclusive Course Model. This situation is presented in figure 2, with the same legend as used in figure 1. In the OpenU pilot project OUNL is experimenting with this scenario.

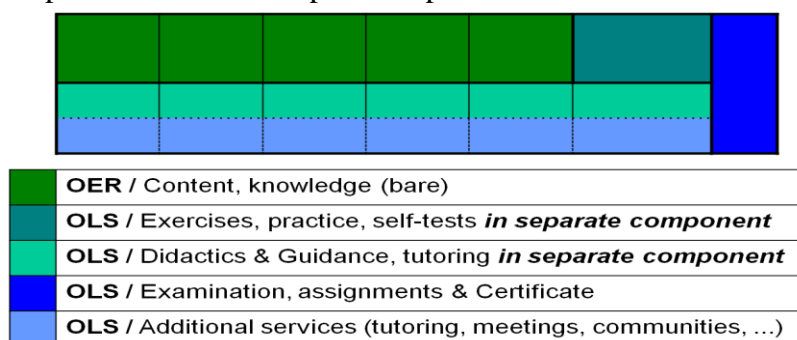
Figure2. Representation of the All-Inclusive Course Model of scenario 2



### Scenario 3: 100% scenario

In the third scenario all learning materials will be offered as OER. Note, however, the difference in figure 3 as compared to figures 1 and 2: the exercises and tests as well as the didactics and guidance have been separated from the (bare) content, thereby allocating only the latter component to the OER learning materials. In this case we will therefore refer to the Split-Component Course Model (Mulder, 2011). This actually is more equivalent to the model of the regular universities in the sense that the latter also do offer exercises and tests as well as didactics and guidance separate from their course materials, mostly face-to-face in lectures, classes and working group sessions. In the Split-Component Course Model, however, these components will be provided as Open Learning Services, supported by dedicated self-learning materials (not for free) that should be combined with the content from the OER learning materials. In both cases students have to pay for the services that create or support their learning process through the (bare) content..

Figure3. Representation of the Split-Component Course Model of scenario 3



In the surveys the three scenarios outlined above have been represented by so-called ‘vignettes’. Each vignette delineates a possible offering. Offerings are constructed on the basis of a set of relevant variables and related values. Table 1 gives an overview of the variables and values in question. The values which represent - what we call - the reference offering are underlined. This reference offering is (except for its 100% OER approach) closest to the current OUNL offering.



Table1. Variables or attributes and value levels to describe a wide variety of possible (but also including many hypothetical) offerings

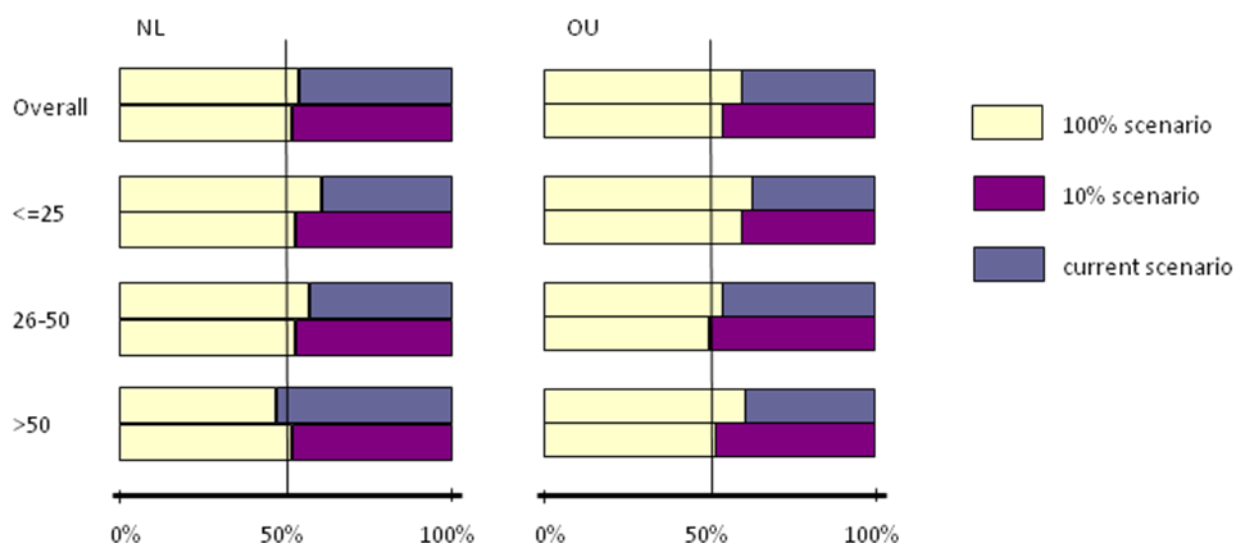
<i>Variable or Attribute</i>	<i>Value levels</i>
Amount of OER available	Minicourse; 10%; <u>100%</u>
Course package	<u>All course materials + 3 examination efforts + study guidance</u> ; Only open materials
Costs course package	€115; <u>€230 (+ €40 material costs + €55 legal fee)</u>
Availability social media	Available after free registration; <u>Not available</u>
Duration of studying course	<u>Self determined</u> ; Prescribed
Pace	<u>6-9 hrs/wk for 15 weeks</u> ; 10-15 hrs 10 weeks; 16-20 hrs 7 weeks; >20 hrs 5 weeks
Mode of Guidance	Personal presence; On distance interactive; <u>On distance non-interactive</u>
Intensity of guidance	<u>General</u> ; Intensive €300; Intensive €500; Intensive €700
Lifelong Learning prescription	€10 per month; €20 per month; €30 per month; <u>none</u>
Proof of participation	<u>Legal certificate</u> ; Certificate; none

Theoretically the total of offerings is 2508. In the surveys only a fraction of this total was used. By fractional factorial design it was possible to use a small subset yet producing relevant information about the most important features of the problem under study. It is beyond the scope of this paper to discuss the methodological and technical aspects of this statistics technique.

## 5. Main findings

There is a rich source of data generated through the two surveys. In this paper, however, we will concentrate on the findings with regard to the three scenarios. In figure 4 the preferences for the current and the 10% scenario are compared with the 100% scenario.

Figure4. Preference for the 100% scenario versus the current and 10% scenarios



The graph above has to be interpreted as follows:

If one looks at the upper bar on the left (Overall, NL sample), the current scenario has been compared with the reference offering (which corresponds to the 100% scenario). 46% of the population prefers the current scenario, so 54% prefers the 100% scenario. Similarly 48% prefers the 10% scenario and 52% prefers the 100% scenario.

The graph also shows that the group of people under the age of 25 shows a significant preference for the 100% scenario in both samples. One should also note the difference in the age group of >50 years: 61 % of the OUNL population prefers the 100% scenario compared to the current scenario, while in the NL sample 53% prefers the current scenario.

We would like to add some more interesting information from the surveys:

- For the OUNL population cutting the price of a course into half will lead to an increase of 10% of people taking the course. This holds both for the young and the old age group. For the NL population this variable has a less significant effect.
- For the OUNL population the preference for a course package with only open materials is less than the alternative package. Depending on the price of the certificate the preference is 29% (for the lowest price) to 20% (for the highest price) lower. The same pattern holds for the NL population.
- For both populations intensive guidance (at additional cost) lowers the attractiveness of the offering, compared to the reference offering. This effect is stronger when the price for the intensive guidance is higher.
- For both populations a so-called lifelong learning prescription (at additional cost) lowers the attractiveness of the offering. This effect is minimal for the older group in the OUNL population.
- For both populations a shorter but relatively heavy study load lowers the attractiveness of the offering. Especially the middle-aged group is sensitive for this.

As mentioned before, for each alternative set with two cases each individual was asked whether s/he actually would take the preferred offering and enroll if it would be available. In figures 5 and 6 the results for this question are shown for the three scenarios.

Figure5. Probability of actually taking the course, NL population

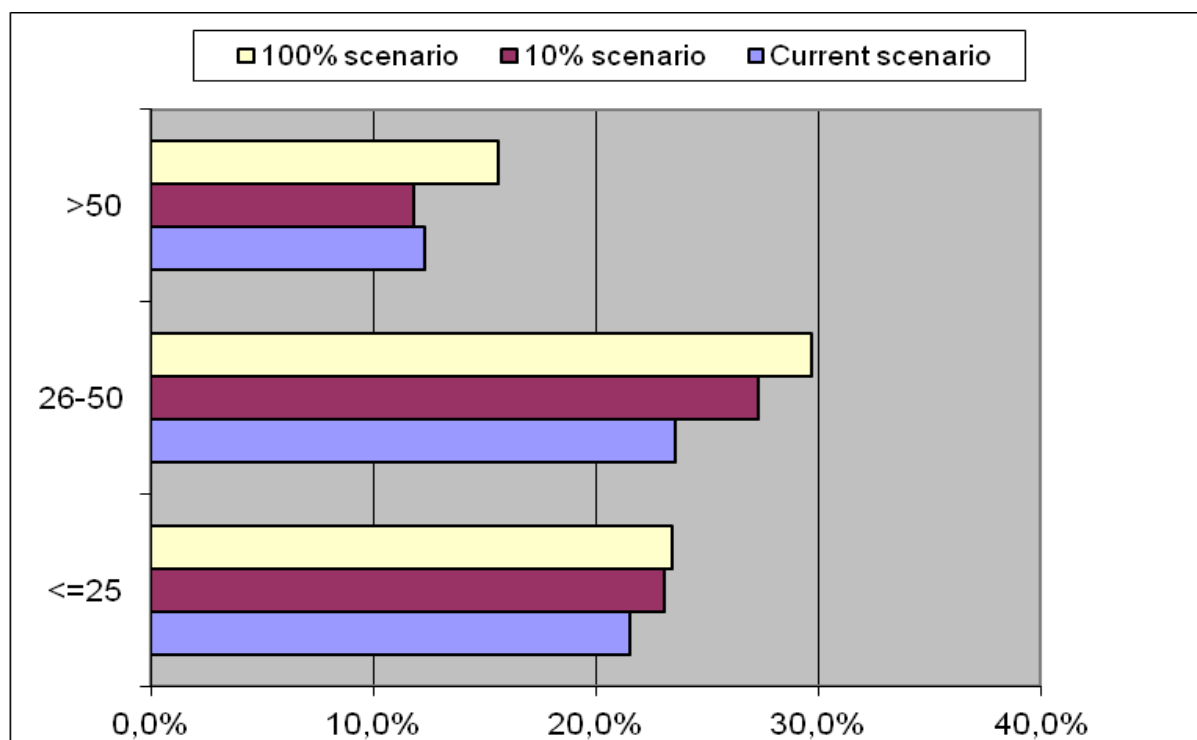
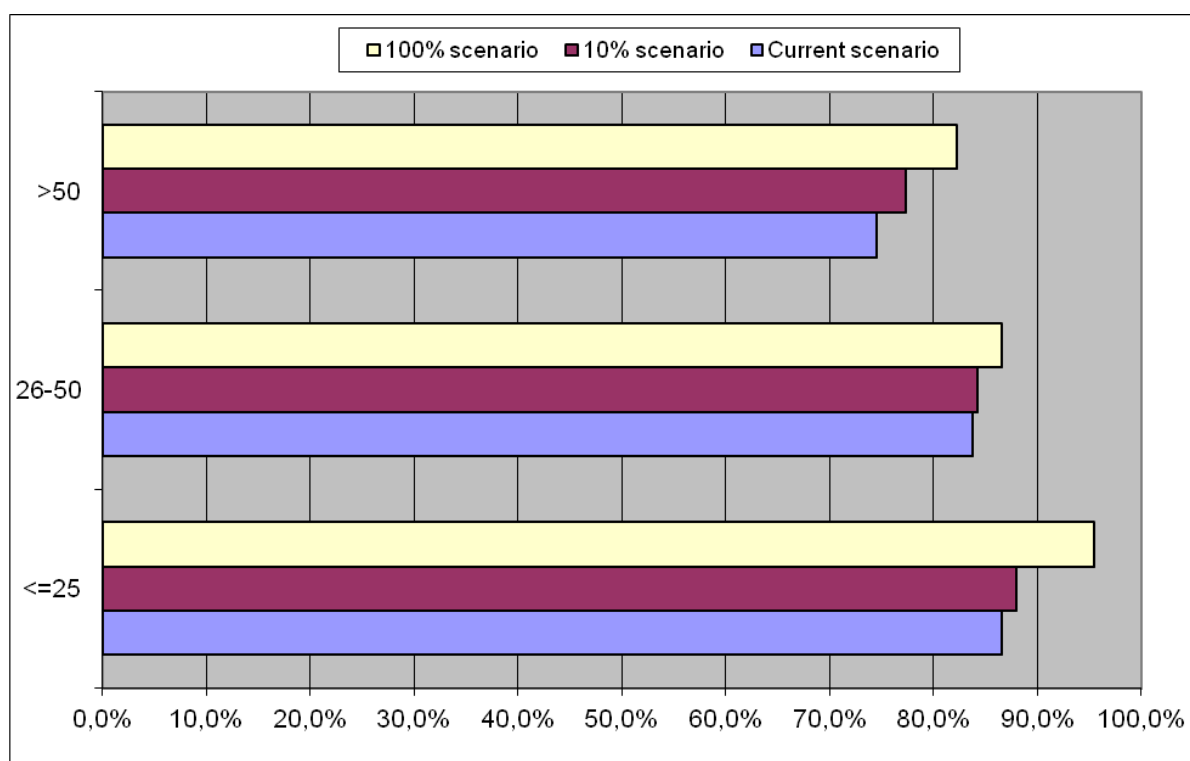


Figure6. Probability of actually taking the course, OUNL population



While the percentages of people who indicate that they will register for a course differ substantially between the two populations (10-30% versus 75-95%), the outcomes show the same pattern, namely that the number of people inclined to take a course increases when the amount of OER increases. In the 100% scenario only the 'bare' content will be published. Yet

more respondents are willing to pay for the additional learning services. It is not clear from the survey results why this occurs since respondents have not been asked to motivate their choices. A possible explanation is that in this scenario a (potential) student would get the best picture of the course and therefore would be more tempted and challenged to actually internalize the content, for which the (paid) services are needed.

A possible explanation for the big differences in the percentages for the two populations is that OUNL students are already familiar with the type of study at OUNL and therefore more prepared to actually take a course than the random sample from the Dutch population.

From a business perspective it is interesting to see what the preferences are if we compare ‘only using OER’ (without a proof of participation) and ‘buying the course package’. Tables 2 and 3 present the preferences for the three scenarios.

Table2. Preference for course package versus only OER, NL population

	<=25 yrs		26-50 yrs		>50 yrs	
	Course	OER	Course	OER	Course	OER
Current	18.2%	1.0%	15.2%	7.9%	7.1%	1.3%
10% scenario	19.4%	1.1%	17.6%	9.2%	6.6%	1.3%
100% scenario	19.8%	1.1%	18.9%	10.0%	9.1%	1.4%

Table3. Preference for course package versus only OER, OUNL population

	<=25 yrs		26-50 yrs		>50 yrs	
	Course	OER	Course	OER	Course	OER
Current	68.9%	9.0%	71.5%	7.4%	56.8%	8.8%
10% scenario	71.0%	9.3%	71.9%	7.4%	59.9%	9.1%
100% scenario	79.7%	10.7%	74.5%	7.6%	64.6%	9.9%

The findings show that only a minor part prefers to only use the OER component (when no proof of participation is possible). The outcomes for a situation in which a certificate for participation can be obtained for €50 are shown in tables 4 and 5.

Table4. Preference for course package versus only OER with a proof of participation, NL population

	<=25 yrs		26-50 yrs		>50 yrs	
	Course	OER	Course	OER	Course	OER
Current	17.7%	1.4%	14.9%	8.5%	7.1%	2.9%
10% scenario	19.0%	1.6%	17.6%	9.2%	6.7%	2.7%
100% scenario	19.2%	1.8%	19.0%	10.4%	9.1%	3.4%

Table5. Preference for course package versus only OER with a proof of participation, OUNL population

	<=25 yrs		26-50 yrs		>50 yrs	
	Course	OER	Course	OER	Course	OER
Current	58.1%	22.8%	64.2%	15.8%	50.6%	17.6%
10% scenario	59.6%	23.6%	64.7%	15.8%	52.7%	18.6%
100% scenario	66.8%	25.4%	66.3%	16.6%	56.8%	19.9%

Comparing both situations for the NL population (tables 2 and 4), there is little difference in preferences. There is a substantial difference, however, for the OUNL population (tables 3 and 5). This population can be divided into two subgroups: students committing to obtain a Bachelor or Master degree and students only aiming at taking some courses. A more detailed analysis taking this into account explains the substantial difference. The group not committed to a Bachelor or Master degree prefers the OER with a proof of participation above taking the OU course. Among the Bachelor and Master degree students the difference is small (and not significant). These results show it is not advisable to offer the possibility to buy a proof of participation as a separate service.

## 6. Conclusion

The most prominent conclusion of this paper is that through all the outcomes presented we observe a similar pattern, which is that the percentage of people inclined to take a course and to enroll increases when the OER share grows. This was not at all clear when we started this survey and can be welcomed as a relevant and encouraging OER stimulus for the open universities who are generally in great uncertainty about and deeply searching for a sustainable OER approach. A little warning though: the results are not always statistically significant, so it would not be valid nor recommended to make an absolute of the specific numeric results. To remain on the safer side one could conclude that the 100% OER scenario would not do worse compared to the current scenario in terms of enrolment of students.

## Acknowledgements

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# **An Emerging Typology for Analysing OER Initiatives**

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## **Abstract**

The investigation of OER initiatives requires rigorous appraisal based on theory as well as descriptions based on practice if we are to understand them and how they might be sustained. A robust typology or flexible classification scheme will enable better comparison of common elements over widely different OER initiatives and help inform and improve praxis at all levels and across all socio-economic and cultural systems. This in turn will help the variety of stakeholders to better understand what is happening and why. This paper describes how a typology was used between 2008 and 2010 to investigate three different OER initiatives in Sub Saharan Africa. The typology was first developed by careful scrutiny of the many OER and OER-related initiatives both globally and in Sub Saharan African. The typology was then both tested and further developed and refined by applying it to the TESSA, Thutong Portal and Rip, Mix, Learn initiatives. The typology uses four main categories – creation, organisation, dissemination and utilisation – and 18 sub categories to examine and analyse each initiative, with each sub category having a number of properties and possible dimensions. The data that informed this process included interviews with key personnel and the coding of a large body of white and grey literature and documentation produced by the initiatives themselves. This typology can thus be used to distinguish one type of OER initiative from another while grounding each in a wider context. For example, initially TESSA concentrated almost entirely on the ‘creation of OER’ while the Thutong Portal concentrated on the ‘Organisation of OER’ in that it spent a great deal of time and energy on the portal storage mechanisms. In other words the elements included in the Typology can be used to describe or ‘profile’ initiatives regardless of their particular emphasis or approach. None of the initiatives need possess all of the elements contained in the typology as long as they have all been considered. As there are different levels of categorisation the typology is simple at the highest level, with just four elements, for use by practitioners; but is detailed enough at other levels to enable researchers to generate research questions. Furthermore the typology is flexible enough to evolve over time as it is applied to more and more OER initiatives both within and outside Africa and also as existing initiatives change and develop over time and while new initiatives emerge. Indeed the relative immaturity of the case study initiatives used to test and refine the typology was a concern for both practitioners and researchers and it is no surprise that the studies main findings were that (a) greater investment was needed in capacity building, (b) more attention given to appropriate use of technology and pedagogy in higher educational systems and (c) more contextual research applicable to sub Saharan Africa to inform those decisions.

## **Keywords**

Open educational resources, Sub Saharan Africa, typology, HEIs, OER initiatives

## **Introduction**

‘Knowledge’ has become a key component of successful economic, social and cultural development for a globalized world. Higher Education Institutions (HEIs) in Africa, as focal points for innovation and the creation, organization, dissemination and use of knowledge, are making every effort to be at the forefront of these developments. Higher Education systems,

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particularly universities and the ministries that support them, continue to strive to take the lead by developing policies and standards that actively promote Africa's participation in the global knowledge discourse (Sawyerr, 2004).

One factor inhibiting HEIs' potential as catalysts for development in Africa is the lack of innovative, alternative methods of instruction currently offered. For example, African HEIs that incorporate Open, Distance and eLearning (ODEL) methodologies and technologies into their curriculum in an effort to increase access to Higher Education are uncommon (Bateman and Murray, 2004). The explanation most often cited for this is a lack of technical infrastructure. Yet access to innovative learning methodologies goes far beyond access to technical infrastructure alone. Issues concerning awareness raising, faculty support, materials development, localization, adaptation, translation, intellectual property, quality assurance, standards, and financial sustainability all require scrutiny in terms of increasing access to quality, affordable and relevant higher education and training.

The doctoral study (Bateman, 2011) this paper is based on suggests that the structured and appropriate development and use of Open Educational Resources (OER) may be able to contribute significantly to reinvigorating and expanding Higher Education in Sub-Saharan Africa. Not only does the OER Movement have potential in the development of much needed ODeL programmes, but it can also make a significant contribution to the way learning materials, educational resources and other knowledge assets are developed and shared throughout the Higher Education sector in Sub-Saharan Africa.

Those involved in the OER Movement early on tended to think of its origins as an extension of the online education model (Johnstone, 2005; Hylén, 2005). That is, a model that delivered education and training using materials (usually digitalized, though not exclusively) that could be used anywhere, anytime by anyone for no cost. However they soon came to realize that such a description risks oversimplifying the nascent OER movement. In identifying how OER might contribute to Higher Education in the future the story of how OER came to be requires further reflection. Though it bears similarities to its main predecessors, namely, the Open Access movement, the Open Education movement, the Free/Libre and Open Source Software (FLOSS) movement and the related 'copyleft' movement of the late 1990s, its genesis is a result of none of these in isolation. Rather, it is the progeny of several convergent developments.

The idea of OER was born of technological advances enabling the creation, organization, dissemination and utilization of educational resources, the notion that access to education is a right, and of a paradigmatic shift in the intellectual copyright movement that increasingly enables and encourages others to benefit from the production of knowledge resources at little or no additional cost (Atkins et al, 2007; OLCOS Roadmap, 2007). In short, OER can contribute to the learning process what educators across the globe value as a guiding principle: a willingness to share knowledge. However, issues remain which threaten to undermine the OER Movement's expansion not just in Africa but across the globe.

In his influential work, 'Pedagogy of the Oppressed', Paulo Freire (1970) outlines what he considers to be a flawed perception which he feels can act as an obstacle when it comes to providing a meaningful educational environment. The perception is of education as a 'banking structure' where the teacher is the depositor of information and the student is the repository for it. An educational environment that lacks an interactive, or as Freire characterized it, 'problem-posing' atmosphere where the transmission of knowledge is multi-directional rather than uni-directional, cannot justifiably be considered education, rather, it is indoctrination. Instead of being emancipated, the learner is oppressed.



A similar view could be taken of the newly forming OER Movement, where information (in the form of OER) has mistakenly assumed the role of educator. Indeed, on occasion, the Movement itself assumes a further connotation: that of the benevolent, developed country ‘providers’ of OER and passive, developing country ‘users’ of them. Massachusetts Institute of Technology Linguistics Professor, Shigeru Miyagawa, has cautioned that by not addressing these concerns, we may see a global information society that resembles “*a map of the world in the 16th century composed of those that colonize and those that are colonized.*” (Miyagawa, 2005)

The promise of OER does not reside solely in the resources themselves, but also in developing the conceptual framework and methodological approaches that organize, manage and ascribe meaning to them in a variety of educational environments. As a result of its relatively late ingress into the OER movement, Africa enters the arena having little to no experience in the OER Movement and with an undefined OER trajectory. Consequently, there is a need to mitigate a very real possibility that African HEIs may tend to participate as unequal recipients of content with little control over its origin, quality and appropriateness. By involving African institutions in the entire OER development process, issues and inconsistencies pertaining to epistemological, ideological, cultural and social relevance as well as technology related challenges are reduced while enabling these institutions to participate actively so that they drive and own the process in terms of its form, content, quality, structure and orientation (Keats, 2003).

## **Methods**

This research study used a case study methodology. According to Schramm & Mayo (1974) the essence of a case study is that it tries to illuminate a decision or set of decisions; why they were taken, how they were implemented, and with what results. Equally Yin (2003) defines the scope of a case study as:

*“an empirical inquiry that...investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident”.* (Yin, 2003:13)

This approach was deemed the most appropriate given that the key analytical tool used in this study was to iteratively apply the OER typology that was developed to several case studies in the SSA context in an attempt to ascertain how and why certain elements were contained within them and what the implications were for further iterations of the OER typology. With this in mind we have applied the entire set of typological elements to each of the case studies to ensure complete coverage of all the identifiable elements that each case exposed and to allow for additional elements that could usefully be added to future iterations of the OER Typology. The data that informed this process included the coding of semi structured interviews with key personnel involved in the 3 initiatives and a large body of white and grey literature and documentation produced by the initiatives themselves, including their websites.

## **The Case Studies**

At the time of the study (2008-10) there were signs that several valuable OER initiatives were forming across Africa, emanating both from Africa itself and in partnership with OER initiatives abroad. While most of these initiatives were still new, there was, and still is, immense interest in the potential of OER to support and enhance Higher Education in Africa. However, there was a risk that as the various initiatives took shape there may be some that

duplicate and perhaps even conflict with others resulting in a less than effective model for OER emerging.

This study critically analyzed three case study OER initiatives taking shape in Sub-Saharan Africa between 2008 and 2010. In doing so it sought to establish:

- What were the origins of the OER Movement? How has it evolved?
- What is the current state of the OER Movement: a) globally; and b) in Sub-Saharan Africa?
- What were the key emerging issues facing the OER Movement generally and did these issues find commonality in the sub-Saharan African OER Movement?
- What was the role of the OER Movement in supporting the Higher Education sector in Sub-Saharan Africa?

The first two OER Case Studies examined were:

- Teacher Education for Sub-Saharan Africa (TESSA) programme<sup>2</sup>
- The Thutong Education Portal in South Africa<sup>3</sup>

A third ‘supplementary study’ was added: the Rip-Mix-Learn initiative at the University of the Western Cape in South Africa<sup>4</sup>. This latter project was not well enough progressed to enable a detailed analysis but since it illustrated a particularly interesting aspect of the OER phenomenon - that of student involvement in the creation of OER – it was included since the development process was not only unique in Africa but one of very few student centred OER initiatives in the higher education sector globally.

The wider literature review indicated that a substantial amount of research on OER is descriptive and based on anecdotal rather than theoretically-based, generalizable data. There was no single comprehensive, widely supported typology describing the OER Movement. Those investigating the movement had tended to categorize OER based on a single category (perhaps with related sub-categories) that is of primary importance to their area of interest. For example, educationalists tend to focus on the pedagogical considerations of the development and use of OER while ICT specialists tend to focus on the technical tools required to support OER. Likewise, there are those that tend to focus on issues of policy, legal frameworks and licensing, business modelling, awareness raising, development agendas, or philosophical perspectives (such as the notions of ‘freedom’ and ‘openness’) and so on.

### **Developing the typology**

This OER Typology has been developed by carefully scrutinizing the myriad of OER (or OER related) initiatives both globally and in Sub-Saharan Africa. Consequently, it is based on observations drawn from the discourse and activity reporting within the OER Movement which are described in the formal literature review, the critical analysis of OER issues and through more anecdotal information gleaned from the researcher’s active participation in the OER Movement. Finally, and perhaps most significantly - the OER Typology has been heavily informed (and tested) through the use of the same categorizations to analyse the case study narratives produced for the doctoral thesis (Bateman, 2011). These narratives were developed through a pattern matching technique that was structured according to the coding elements contained in the initial OER Typology, a coding scheme which began with four broad categories derived from the review of the wider ODeL and OER literature:

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<sup>2</sup> [www.tessafrica.net](http://www.tessafrica.net)

<sup>3</sup> <http://www.thutong.doe.gov.za/>

<sup>4</sup> <http://freecourseware.uwc.ac.za/ripmixlearn/>

- The Creation of OER,
- The Organization of OER
- The Dissemination of OER.
- The Utilization of OER

From these four broad categories, several sub-categories along with the properties for each were established and, through an iterative process, these typological elements guided the later analysis of the OER initiatives selected for the case studies whilst each case study analysis equally informed the categorization of the typological elements. These final categorizations are presented in Table 1.

The classification variables within the table are described as ‘Category’ (first level), ‘Sub-Category’ (second level), ‘Property’ (third level) and ‘Possible Dimension’ (this fourth level is not shown her for clarity). The inclusion of the various descriptors involved a process of identifying the ‘OER Movement’ as a phenomenon and classifying the elements from which it is comprised. The Typology can therefore be used to distinguish one type of OER initiative from another while grounding each in a wider context. For example, initially the TESSA Programme concentrated almost entirely on the ‘Creation of OERs’ while the Thutong Portal concentrated its activities primarily around the ‘Organization of OER’ in that it has spent a great deal of time and energy on the portal storage mechanisms. In other words the elements included in the Typology can be used to describe various OER initiatives that exist within the wider OER Movement regard-less of their particular emphasis or approach. It is hoped that it may also be used to inform and guide the development of nascent OER initiatives (such as Rip, Mix, Learn) as they examine the various components they may need to consider during their formation.

Table 1 The final categories, sub-categories and properties that comprise the OER Typology for Sub Saharan African initiatives

<i>Category</i>	<i>Sub-category</i>	<i>Property</i>
Creation	Authoring original OER	Design approach
		Instructional design principles
		Media
		Tools
		Capacity enhancement/training
	Interoperability and compliance to support re-mix	Tagging and metadata systems
	IPR & Licensing Framework	Open
		Creative Commons
		GNU GPL
		Closed (Copyrighted materials)
		Editable
Organisation		Format
		Standards
		Granularity
		Searchable
	Collaborative processes for OER Creation	Structured Communities of Practice (CoPs) of OER developers
	Governance and Management Schemes	Policy Framework
		Strategic planning

		Inter Institutional Collaboration Agreements
	Storage/Portal mechanisms	Repository Development
		Storage and access
	Institutional Development	Developing a knowledge sharing culture
		Scale Of Participation
		Institutional Framework for the use of OER
	Sustainability	Business Modelling
		Funding
		Strategic planning
	Research	Research agenda
Dissemination	Sensitization	Awareness Raising and Advocacy
		Motivation for Participation in OER Movement
	Delivery methods for remote and local access to OER	Mode of Access to Learning Opportunities
		Packaging
		Print on Demand
		Remix (Mix and Match)
	Technical Infrastructure	Connectivity/Bandwidth
		Access to computing infrastructure
		Software
		Capacity Enhancement/Training
Utilisation	Mechanism for accessing /updating / Repurposing OER	Accessibility
		Versioning
		Capacity Enhancement/Training
	Using existing OER	Adoption/Uptake
		Scalability
		Capacity Enhancement/Training
	Quality Assurance Mechanism	Curriculum Design
		Assessment
		Curriculum review
	Accreditation of materials	Qualification Framework
		Credit Arrangements
	Pedagogical Model	Learning Mode/Type
		Learner support

## Discussion

While the OER Typology itself is the main focus of this paper its iterative development did enable some specific findings to be drawn out about the OER Movement in Sub Saharan Africa at that point in time when the analysis was undertaken. The research supported the view that a shift in thinking is required in the way Higher Education is provided in Sub-Saharan Africa and that elements of the OER Movement forming globally may be able to catalyze this shift. Further, this will need to be supported by adequate planning and resource provision, without which the ability of countries, institutions, educators and, indeed, the learners, to benefit from OER strategies and policies that will support the cost effective provision of quality Higher Education programmes, will be severely curtailed.

In any education system a supportive policy environment is essential to the success of improving education provision. This is particularly the case when it comes to informing and guiding the expansion of the OER Movement that is aimed at contributing to the levels of transformation required in Sub-Saharan African universities. The notion of ‘openness’ needs to become a key element of the policy discourse for countries in Sub Saharan Africa that seek to improve educational quality within the institutions they govern in order to ensure that their development objectives are met.

The research further suggests that appropriately designed OER policies and strategies should form part of existing education and development policy and should support the following:

- increasing access to educational programs in general with a renewed emphasis on information and communications technology (ICT) supported education;
- developing capacity enhancement programmes to ensure the requisite skills are readily available;
- developing quality assurance (QA) frameworks;
- developing workable business models and budgetary frameworks for OER that result in cost effective teaching and learning approaches; and
- supporting and coordinating the expansion of education-related infrastructure, including ICT.

This study also suggested that there is a need for further research into OER creation, organization, dissemination and use that ideally, emanates from the African HEIs themselves. There was little formal research available that analytically describes and evaluates good practice for OER in Sub-Saharan Africa. More specifically, there is need for further research into how OER might affect the costing, financing, management (including learner support systems, assessment, cross border accreditation), pedagogy (including the impact of Web 2.0 tools and collaborative learning environments), technology (including mobile learning), access (including issues surrounding gender equity), and the value chain of teaching and learning provision in terms of its impact of realizing national development goals.

This research study suggests that there is a benefit to enhancing the capacity of institutions to make extensive use of OER in the design, development and implementation of education programs and that these can be further supported by the appropriate and effective use of ICTs. However, given the dynamic nature of ICT supported education and the on the horizon impact of Web 2.0 environments, rather than launching into this process largely unprepared and risking scarce resources, a step-wise progression is required that should build on Africa based OER initiatives such as the case studies examined during this study. This should include needs analyses, feasibility studies, and pilot programs that demonstrate improved models of demand driven, cost effective, affordable, and quality teaching and learning that are supported by the appropriate and contextualized use of OER.

To this end, inter-institutional collaborative partnerships (Keats, 2004) should be considered since they enable the:

- sharing of developed courses (as OER) in order to reduce development costs;
- joint development of new resources that are appropriate to the developing world context;
- sharing of facilities such as libraries and learning centres (for learner registration, distribution of study material, and examinations) to reduce duplication of costly resources;

- collaborative delivery of programmes to promote cross border accreditation and, in turn, a mobile labour supply; and the
- establishing of joint partnerships with external agencies providing professional development and/or funding

As the case studies attest, some HEIs (and Non-Governmental Organizations) in Sub-Saharan Africa are beginning the process of developing and/or supporting the use of OER. At the same time, increasing numbers of African universities have embraced the possibilities the Internet enables in terms of expanded education provision (e.g. via eLearning). This research study suggests that, to a large extent, they tend to do so using content push methodologies based on Web 1.0 paradigms. There is yet to be wide scale roll out of initiatives that support collaborative development of OER for multi-mode delivery of university programs. This is due in part to lack of extensive ICT infrastructure beyond the urban context and in part to an ongoing lack of understanding as to just how OER might contribute. On the other hand, there are some initiatives that are actively adopting the Web 2.0 tools and environments in the creation of OER. The cases analyzed in this study are among these.

Finally, the study suggested that the identification and inclusion of the key stakeholders who would participate in the development of an African OER Network focused on Higher Education and Training might be an effective starting point. This networked structure could then work collaboratively on developing and refining a set of coordinated support mechanisms, policies, training initiatives, research initiatives, funding initiatives that together would result in the sustainable development and use of quality OER to support Higher Education and Training in Africa.

## **Conclusions**

Previously, categorizations such as policy framework, interoperability, licensing framework, remix potential and the like were used to define OER initiatives at a broad level. However, as previously discussed, these are not appropriate categorization variables that can serve either interdisciplinary research agendas or multi-stakeholder participation because they tend to be too narrowly focused around single stakeholder areas of interest. The OER Typology presented here, along with the case study reports in the thesis (Bateman, 2011), demonstrate that the various categories, subcategories, properties and dimensions are descriptive of a diversity of OER initiatives. As such, it is not the intention that each and every typological element need be applied consistently to all OER initiatives.

It is hoped that the Typology is simple and pragmatic enough to provide for a basic understanding of the OER phenomenon by both researchers and practitioners. First, there are only four categories of involvement in the OER Movement in the Typology: creation, organization, dissemination and utilization. In this way, the Typology remains simple at the first-order level. This simplicity is intended serve academics across various disciplines that need a unified view of the ecology of the OER Movement in order to generate research questions. The Typology is also a classification system that may be useful to researchers who seek to pursue programmatic research and theoretical advancement of the OER Movement from a variety of disciplinary perspectives. Inevitably, OER community members and researchers may continue to debate the relevance and appropriateness of the OER Typology presented here. It is hoped that this debate will be enriched by knowledge generated from further empirical studies that are, at least in part, inspired by the Typology.

## Postscript

Since this doctoral study was carried out there have been many initiatives and developments that have indeed begun to address some of the issues for OER use in Sub Saharan Africa outlined earlier and to which the OER Typology could be applied. This is particularly seen in the work of new initiatives such as OER Africa<sup>5</sup> and the combined efforts of existing organisations working in Africa, namely the African Virtual University<sup>6</sup>, UNESCO<sup>7</sup> and The Commonwealth of Learning<sup>8</sup> (the latter two have recently developed Guidelines for OER in Higher Education developed together with the Commonwealth of Learning (UNESCO/COL, 2011) and launched an UNESCO OER Platform in November 2011. Indeed collaboration has been a key element within the OER Movement within Sub Saharan Africa.

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<sup>5</sup> <http://www.oerafrica.org/>

<sup>6</sup> <http://www.avu.org/>

<sup>7</sup> <http://www.unesco.org/new/en/communication-and-information/access-to-knowledge/open-educational-resources/>

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# **An Institutional Approach to Supporting Open Education: A Case Study of OpenCourseWare at Massachusetts Institute of Technology**

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## **Abstract**

OpenCourseWare (OCW) and Open Educational Resources (OERs) are world-wide movements in education practice (Carson, 2009). A challenge to the continued growth and sustainability of OERs is motivating institutions to invest in an activity that effectively provides a freely available resource that benefits external educators and learners. To understand how an institutional OER culture is established and supported, a collaborative study was undertaken by researchers from a UK Higher Education Institution (HEI) and the Massachusetts Institute of Technology (MIT) to investigate MIT's provision of OCW on an institutional scale. The study involved in-depth, semi-structured, face-to-face interviews and focus groups with MIT staff from: faculty, institutional managers, and members of the OCW production team. Interviews, performed by Plymouth University researchers, were digitally recorded and later transcribed for thematic content analysis.

Themes that emerged were grouped under three headings related to the culture of participation in OCW at MIT: Mission and motivation, Impact of OCW, and the Future development of OCW. One finding under the first theme was that participants actively shared in the educational mission of MIT in educating the World through an enveloping altruistic and philanthropic ethos of openness in both educational and research output. An early goal and constant motivator for OCW production was to produce a comprehensive, content-rich and quality resource which covered all teaching at MIT and in a format that would capitalise on internet technologies for global distribution.

The findings reveal that the success of OCW at MIT is due largely to the systems and approaches which were introduced at an institutional-level. Through adopting a participatory approach, faculty were engaged throughout the development and realisation of the initiative. The most important single factor contributing to the success of OERs at MIT has been the establishment of a central support team, MIT OpenCourseWare, which, through coordinating production and commissioning of OERs, has taken the burden of the publication process from faculty.

## **Keywords**

OCW, OpenCourseWare, OER, Open Educational Resources, motivation, sustainability, faculty, institutional support.

## **Introduction**

Open educational resources (OERs) encompass a broad range of learning materials which include: class notes, videos, assessments, presentations, examinations, simulations, worked examples, software tools, materials or techniques used to support access to knowledge (JISC, 2008). A defining feature of OERs is that they are released under an intellectual property licence that permits open use, adaptation and repurposing. The digital nature of the resources has been instrumental in global distribution through the internet. For learners, OERs represent

a profound shift in the way they study and access information (Johnson, Levine, Smith, & Stone, 2010).

For educational institutions, the motivations for engaging with open learning materials are many and varied and range from the pragmatic to the altruistic (Barrett et al., 2009; Browne, Holding, Howell, & Rodway-Dyer, 2010; McAndrew, 2006; Sclater, 2010). Institutions can promote their academic portfolio by displaying high quality examples of learning materials available to their students. OERs also allow academics to share teaching materials with an audience larger than just their own students and can increase their own productivity by accessing high-quality, ready-made teaching materials produced by colleagues from their own discipline. Students benefit from being able to access a broader range of learning materials both on their primary subject and on related topics.

A relatively comprehensive literature exists which examines institutional and organisational rationales for the adoption of OERs. Hylén (2006) suggested five incentives to produce OERs which focus on the benefits that sharing knowledge can bring to an organisation.

Institutional barriers to OERs often include financial implications both in terms of the production of assets and the potential diversion of resources from the core business of the university; even where this activity is aligned to the university's mission. For example, McAndrew (2006) identified this in the Open University which specialises in distance learning. Adoption of the Open University's OER system, OpenLearn, could be seen as competing with the core business of the institution in terms of distance learning. However, it is clear that there are both institutional and far reaching educational benefits for engaging in knowledge-sharing through OERs such as OCW (Mora, Hassin, Pullin & Muegge, 2008).

Massachusetts Institute of Technology (MIT) is a world leader in the production of OERs through its OpenCourseWare (OCW) initiative. A timeline showing the history of OCW at MIT can be viewed at <http://ocw.mit.edu/about/our-history/> and an overview of OCW development has been given by Caswell, Henson, Jensen, & Wiley, (2008). An initial pilot of OCW not only made learning materials for 500 courses available but also resulted in some unexpected benefits for MIT such as improved coordination and collaboration between its departments (Vest, 2004). Abelson's (2008) analysis of MIT's development and adoption of OCW documents the alignment of OCW's implementation with the institution's mission, that is, "enhancement of MIT's leadership and reputation..., the benefits to on-campus intellectual life, and the recognition that 'MIT is really about dissemination of knowledge'" (Abelson, 2008, p. 168). Further, the OCW initiative enabled the development of MIT's mission to spearhead an international movement (Atkins, Brown, & Hammond, 2007; Carson, 2009) to "build a web of knowledge that will enhance human learning worldwide," (Vest, 2004, p. B20) and "advance education by constantly widening access to our information and inspiring other institutions to do the same with theirs" (Vest, 2004, p. B20).

Studying MIT's strategy for developing OCW may provide valuable insights into how an OER culture can be encouraged and supported on an institutional basis elsewhere. In the UK, engagement with OERs has been largely driven by the higher education (HE) sector's professional bodies such as the Higher Education Academy (HE Academy, [www.heacademy.ac.uk](http://www.heacademy.ac.uk)) and JISC ([www.jisc.ac.uk](http://www.jisc.ac.uk)). Plymouth University has been successful in receiving a series of grants from the HE Academy and JISC to support OER projects, the latest of which funded the production of OERs to support the professional development of distance learners in the workplace. Plymouth University was interested in how best to sustain the development of OERs beyond the external funding period by developing an OER culture

within the institution. To this end, a group of researchers from Plymouth University conducted a study of the institutional support and faculty engagement in OCW at MIT, the former being the subject of this paper.

## **Methods**

The data gathering phase of the project was undertaken at MIT during one week in March 2011. The research team conducted a series of interviews with MIT staff to explore perceptions about the institutional framework and individual motivations for participation and engagement in OCW. Ethical approval was obtained from the Human Ethics Sub Committee at Plymouth University prior to data collection.

Recruitment: Participants (n= 27) were purposively sampled by one of the authors [DC] from three groups: faculty (n = 11), institutional managers (n = 4), and the OCW team (n = 11). One postgraduate student with direct experience as a user and contributor to OCW also participated in the study. Every effort was made to encourage participation from faculty who both did and did not engage with OCW to gather views from a wide range of experiences. All participants received a study information sheet and consent form prior to participating in an interview and were given the opportunity to ask questions of the researchers.

Procedure: Face-to-face interviews were guided by a semi-structured interview schedule that was constructed by the research team in order to gain a holistic understanding of MIT's institutional approach to encouraging faculty engagement in OCW. The semi-structured nature of the schedule allowed these issues to be examined whilst enabling participants the freedom to explore issues of importance to them. Interviews were digitally recorded with participants' permission. The research team met following each day of data collection to discuss the interviews and the issues raised. The interviews were transcribed verbatim.

Analysis: Data was analysed using thematic content analysis (Smith, 1992). All transcripts were coded independently by two researchers. Coding and emergent themes were then discussed until agreement was achieved. Themes and interpretations placed on them were discussed and verified by the research team.

## **Findings and Discussion**

Emergent themes from the thematic content analysis were grouped under three areas relating to the culture of participation in OCW at MIT:

1. Mission and motivation: reasons for initial participation and engagement;
2. Impact of OCW: benefits and challenges
3. The future development of OCW.

Each of these broad themes contained sub-themes, detailed in the Discussion.

### 1. Mission and Motivation: reasons for initial participation and engagement

#### *Alignment with MIT's mission*

The MIT participants involved in this study were found to be clear and supportive of the rationale of OCW in operationalising the institution's educational mission, that is 'educating the World' through an enveloping altruistic and philanthropic ethos. Though MIT is privately funded and its core business is on-campus education, participants emphasised MIT's objective of ensuring that research and education be disseminated freely to a wider audience. Digital technologies allowed the global distribution of OCW through the internet to reach geographically dispersed educators and learners.

#### *Institutional motivations*

The more established faculty recalled early debates regarding a business model for OCW. It was agreed early on that making money from OCW did not fit with MIT's institutional ethos. Provision of MIT course materials completely free of charge and in an accessible format allowed MIT to fulfil and expand its mission in an innovative way. Provision of free course materials developed by MIT was perceived by participants as benefitting others without any expected tangible benefit to the institution itself; the fulfilment of its mission being motivation for participation in and of itself, a sentiment illustrated by the following quote,

*"...for MIT as an institution, ... it is a great act of charity, it shows that MIT wants to have a positive impact on the World and isn't requiring compensation at every step of the way, ... this is a private university, it needs benefactors but ... this is a really powerful idea, sharing knowledge and doing so in a way that touches people that could never afford it..."*

The philanthropic and charitable nature of OCW, whereby free course materials were available to anyone, provided the institution with a degree of publicity not possible using alternative methods. This charitable image enhanced the reputation of MIT in terms of both its mission and educational leadership. Furthermore, it was hoped that the OCW initiative would promote and cascade the concept of open education through the HE community with the expectation that other Higher Education Institutions (HEIs) would also contribute resources.

A major driver, perceived by participants in the study, was for MIT to develop OCW to ensure that it led the field in online learning. By providing a comprehensive resource freely available to HEIs, MIT sought to set a standard for such provision. As distance learning for accreditation was not an element of MIT's core business, provision of OCW was the most effective method by which MIT could become a trailblazer and World leader in online education whilst maintaining alignment with its mission and ethos.

#### *An institutional participatory approach*

A major contributory factor to the establishment of an OER culture at MIT was the participatory approach taken by the institution to involve faculty at every step of the OCW initiative; from the initial development phase, deciding the rationale and objectives, to the construction of the OCW resource itself. By allowing faculty to shape the remit and scope the resource, staff gained a sense of ownership, thereby facilitating continued engagement. During this participatory process, the decision to provide access to course materials free of charge emerged. The open, not-for-profit nature of OCW embodied MIT's mission and some participants stated that had OCW been a profit making venture, they would not have participated.

The OCW initiative provided an open institutional platform through which faculty could share their course materials and elevated the dissemination and recognition of their teaching materials in a way comparable to that of their research outputs. This outward facing elevation in the value of teaching positively impacts both institutionally and externally and is provided with enhanced credence by the institutional backing of MIT.

*"...it's ... incredibly gratifying but also really important to disseminate the work we do to a broader audience, it's very frustrating to spend so much time working on these class materials to realise that it is the dozen, two dozen, three dozen students who will see it..., far better to have the walls wide open and to have as many eyes who could benefit from it as possible..."*

### *Institutional OCW Champions*

Faculty identified another contributory factor to the success of setting up an OER culture: the institutional support of champions. In the initial phase of OCW, it was those faculty with previous experience of technology enhanced learning and open education that more readily participated. These early adopters already had digital resources prepared for their students and therefore publishing their resources as OCW was easier than initiating a new resource. The institution promoted such early adopters as champions and their work as exemplars, which in turn encouraged more faculty to engage, as supported by the quote,

*“...we are not fundamentally going to change any faculty minds unless there is a faculty champion who wants to see this project succeed...”*

### *OCW Publication Team*

The single most important contributory institutional factor in the production of OER assets was the establishment of an institution-wide OCW publication team that handled intellectual property issues, liaised with and supported faculty, and prepared and published the completed OCW materials. As the team was led by a senior manager, OCW had representation at executive management level, thereby keeping the interests of OCW at the fore on an institutional level.

The support provided by the OCW Team involved a fully comprehensive service in the development and publication of materials including: formatting resources, providing note takers to enable written forms of lectures to be produced and addressing intellectual property issues.

Intellectual property issues were perceived by participants in this study as particularly burdensome in terms of both workload and the expertise required. Without the level of support provided, faculty believed that they would not have been able to engage with OCW. Additionally, the OCW team saw their support role as preventing barriers to engagement from developing. MIT faculty, like teaching staff elsewhere, have a high research, teaching and administrative workload. It was essential to ensure that any burden caused by faculty engagement with OCW was minimised or circumvented.

An important part of the publication process was developing close relationships with faculty whereby the OCW team informed faculty of the need for new courses or which materials required updating as well as informing faculty of the number of hits on their materials, providing a measure of the interest in their resources. Faculty reported that though the OCW team provided a comprehensive service, they still felt in control over their materials and could determine their own level of involvement. One issue around control was ownership of materials: both faculty and the OCW team participants stressed that all materials remained under the ownership of the faculty whose work it was.

Most HEIs would not have a dedicated central OER team to assist with the publication of materials and it is left to individual faculty to produce their own. In our interviews with participants, it became clear that had this approach been taken at MIT, faculty would not have engaged to the level it has done, thus illustrating the importance of institutional investment in central resources to facilitate this type of work.

## 2. Benefits of OCW

Participants in this study discussed wide-ranging institutional benefits from the perspectives of four main groups of stakeholder: MIT itself, MIT faculty, MIT students, and independent learners. Some of the benefits were common across groups and some were specific. First, the common benefits are outlined.

Accessibility For MIT, ease of access by the public to its teaching materials was seen as essential as it allowed learners from across the World to gain knowledge from MIT's work.

Some participants expressed the view that as an institution, MIT was often regarded as inaccessible to the vast majority of the public but that OCW now provided a gateway to a wide ranging set of resources and a window into a widely and highly regarded institution.

Participants viewed the ability to access resources on demand as advantageous to both MIT students and independent learners. For MIT students specifically, faculty viewed the ability to access resources remotely, for example when on placement, engaging in relief work overseas or unable to attend classes, as beneficial to their students' learning. MIT is aware that its programmes are highly demanding on students and the availability and accessibility of OCW were perceived as helping students meet their academic targets.

Common format Although there were variations in depth and completeness of content within some courses, the uniformity of presentation and common format of the site itself was viewed by participants as advantageous to users and contributors. The MIT branding not only publicised the origin of the materials but the common format facilitated navigation through the site, bred familiarity and set expectations of what was available on the platform and within the resources themselves.

Content organisation Due largely to the initial content-driven objective of OCW, the site itself was viewed by many participants as an outward facing repository on which course materials were organised and stored and thereby provided a window into the quality of teaching at MIT. However, views were expressed that the content was organised in a way that mirrored the academic structure of the university, meaning that someone unfamiliar with the structure might have problems locating materials on specific topics. Recommendations were made that the course materials could be arranged on a more subject related basis rather than by department.

A range of benefits were also identified for the institution and end users:

Institution-specific benefits Participants in this study stated that though the implementation of OCW had not changed the core business of MIT in terms of on-campus teaching, its introduction had facilitated a range of institutional benefits, such as the good will generated by MIT's provision of a free and quality service and had received extensive publicity worldwide, with MIT being viewed as a trailblazer and innovator in open education. This heightened publicity has increased international collaboration for MIT, the extent of which would have been more difficult to achieve without OCW.

OCW has become a recruitment tool, accessing a wider pool of potential students and increasing visibility in a highly competitive HE market. Potential students browsing OCW had a better overview and understanding of what courses were offered and gained an insight into the teaching practices and educational ethos of MIT as a HEI, thereby better preparing them for entry to MIT.

Participants believed that increased preparation for the life and expectations of an MIT student potentially reduced attrition by students who were not properly prepared for the rigours of an MIT education as illustrated by the following quote,

*“...students here rely on OCW prior to becoming students at MIT, when people are considering coming to MIT, they can look at what the courses are like, so it gives them a flavour for what MIT is actually like as opposed to what might be ...”*

### 3. The future development of OCW

Participants perceived the main driver and direction underlying the future of OCW as a progression from the original content-driven objective, in terms of volume of material, to a user-driven approach; specifically to develop and tailor both the platform and the materials toward the most prominent user group, that is independent learners. Sub-themes emerged, each concerned with enhancing aspects of OCW to ensure future-proofing of the resource within the open education market.

#### *Enhancing technology and functionality*

Enhancing technology and functionality of OCW in terms of both the platform itself and media on which course materials were based was viewed as vital to the future and longevity of OCW by participants. They identified the need to ensure that OCW retains the reputation of being an innovative, World-leading open-education resource.

Participants suggested various options to enhance the learning experience of the end user, such as: video and interactive elements whereby learners could interact with each other as well as educators; more intuitive browsing functionality that was not so heavily reliant on the MIT departmental structure; and breaking up material including video in order to facilitate wholly direct access to required information on demand. Access through mobile devices was also mentioned as a desirable development.

#### *Enhancing access and content*

Participants were concerned whether resources were truly openly available to anyone wishing to use them. Although incorporating innovative technologies was seen as desirable, it was expressed that it must not be detrimental to the accessibility of content by users. It was therefore considered part of the user-driven future mission of OCW to ensure parity of content provision, especially for communities considered underserved educationally due to language, socioeconomic disadvantage, educational level and access to technology.

One way that the resource could be enhanced for the benefit of users in the future was to address uneven content across courses. Although the OCW team ensured that all course content reached a set standard before publication, course content often varied across a range of elements including quantity of materials and type of media used (for example, PowerPoint presentations; pdfs of notes and reading lists, and video). It was perceived as imperative for there to be uniformity in depth of content offered across courses.

#### *Developing the institutional and educational ethos*

Participants saw the basic continuation of OCW as vital in the drive toward enhancing the prevalence of open education to the extent that some saw such resources as taking a stand against textbook publishers, which limit availability and accessibility of many learners to educational resources. Further, building on the altruistic and philanthropic underpinning of the institution's ethos, it was seen as both essential for OCW to develop its accessibility and focus to further its societal impact. This also included the need for the development of MIT's outreach mission in sharing knowledge and resources openly with other educators for the benefit of learners.

## Conclusion

The success of the OCW initiative at MIT can be attributed to a series of institutional approaches that engendered the establishment of a culture of OERs; a shared charitable mission, a participatory approach to engagement of faculty, and a central OCW publication service.

All participants spoke of strong support for the continuation of OCW and that it had become an integral component of the institution as an essential outward facing showcase of the educational model and content of MIT. There is a challenge facing OCW beyond the initial funding stage of finding ways of financially sustaining the work of OCW whilst ensuring that all content remains freely available to all those who want to access it, thereby maintaining the institutional ethos.

Participants spoke of the current uncertainty around funding of OCW and the level of institutional support that might be offered. Further, participants put forward a range of ideas as to how funding may be identified and additionally how aspects of OCW may be monetised in order to bring in revenue to support maintenance of the resource and future developments. Traditional ways of supporting such enterprises, such as endowments and donations, were generally accepted as appropriate ways of funding the on-going work of OCW. However, there was some acknowledged sensitivity around other more novel ways of encouraging funding such as advertising on the site. Despite this, in general, as long as the methods used to boost funding did not in any way impede access to and use of resources by educators and learners, these would be considered acceptable.

One of the major tensions in developing a sustainability strategy for OCW as viewed by MIT participants and linked to the dilemma around institutional mission is that of accreditation. It was discussed under the theme concerning mission and motivation for OCW that the original decision to develop a business model based on commercial distance learning was quickly disbanded as it was considered an inappropriate way forward for the institution. Some participants viewed accreditation for courses supplied via OCW as a credible and suitable method to generate income. There was some debate as to whether this course of action would benefit MIT as a whole and importantly if accreditation would become a barrier to its knowledge sharing and outreach mission. Therefore, if accreditation was to become a core funding stream for OCW, it should not restrict access to any course materials, but gain revenue solely for enrolment or assessment for credit or course completion. The use of open learning materials for accreditation has been the subject of a recent article in the Times Higher Education (Marcus, 2012) which reviewed the current state of how non-university, distance-learning organisations, such as the University of the People, are offering low-cost study using OCW. Though such organisations cannot award credit for courses, they provide certification of learning that might be acceptable to employers. In the UK, there is an increasing association between employability and choice of degree path and the certificates awarded by these unconventional ‘universities’ have the potential for offering a low-cost route, bypassing the need for a high-cost degree.

OCW at MIT has been a journey in that there have been numerous unexpected outcomes. The initial aim to produce resources for educators has also resulted in benefits for the institution’s staff and students as well as establishing a virtual worldwide student population. Despite future challenges to OCW, there are valuable lessons to be learned from the institutional approach to supporting OERs at MIT that could benefit HEIs worldwide looking to join the open learning journey.



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# **Appraising the Transformative Power of OERs for Learner-centred Teaching at the University of Mauritius.**

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## **Abstract**

Barriers to using OERs include lack of awareness about OERs and intellectual property rights, academic resistance and lack of motivation to adopt technologies in their teaching owing to increasingly heavier teaching and administrative workloads and availability of just-in-time and just-in-context alternatives through search engines. A pre-workshop questionnaire was devised in parallel with an online reflection forum to evaluate to what extent academics at the University of Mauritius are aware of OER sources, how, if at all, they are using Open access material, to what extent they integrate technology in the classroom and how this could transform their teaching practices. Results show that academics access OER courseware, but could do with more training programs. In terms of teaching transformation, academics are willing to “step down” and acknowledge students with more “power” and responsibility for learning but also allowing them to evaluate their learning. This move towards learner-centeredness can be achieved with the right support - professional development programmes in educational technology and encouraging policies at the University of Mauritius.

## **Keywords**

Open Educational resources, Mauritius, Teaching practices, Transforming education, learner-centred teaching.

## **Introduction**

When the International Council for Open and Distance Education (ICDE) launched its global Open Educational Resources (OER) Task force in November 2006, it was said that: “One of the main driving forces for efficient and quality e-learning in the future is likely to be OER, which is a tremendous opportunity for everyone to share, use and reuse the world’s knowledge.” (ICDE, 2006). The main assumption here was that e-learning has a major presence in the teaching practices of academics and that the latter are aware of the potential improvement in the quality of the design and delivery of their content. At the University of Mauritius (UoM), the Virtual Centre for Innovative Learning Technologies (VCILT) provides the main e-learning facilities with Moodle as platform and the regular organisation of workshops to guide lecturers for better design and delivery of their online course. Another initiative towards increasing quality teaching at the UoM is the Post Graduate Certificate in Teaching and Learning (PGCert TAL) where it is mandatory and university policy for new academic recruits to go through the first module TAL 5010 Academic Induction to be accepted on a permanent post since 2003. The Certificate level also comprises a module (TAL 5012) on Educational Technologies which is run totally online so that the lecturers experience this mode of delivery as would their students and so that they design more technology-enhanced learning activities for their students. While these opportunities serve to improve teaching and learning at the UoM, attaining the level of post graduate certificate requires that we wait for seven years before graduating with a PGCert in Teaching and Learning which demonstrates a very inefficient program. Also, we have very little information as to means and ways, or whether at all, academics integrate OERs for their classroom interactions. We anticipated on academic teaching practices in relation to Open Educational Practices (OEP) through a questionnaire survey. A total of 45 academics responded to the questionnaire out of the 98 invitations sent. The low response could actually point to apprehensions or aversions of academics with anything to do with Educational technologies. In the Open e-Learning Content Observatory

Services (OLCOS) roadmap, Geser (2007) had warned about the insignificant impact of OER in teacher-centred dominant practices, and emphasised the need to foster open practices of teaching and learning that are informed by an educational framework supported with digital content, tools and services in the learning process based on:

1. competency-focus,
2. the constructivist paradigm of learning and
3. creative and collaborative engagement of learners

These three main approaches were then integrated in a follow-up workshop with academics who were following the TAL 5012 Educational Technologies module.

### **The University of Mauritius Context – and why we should start thinking seriously about OERs.**

Established in 1965 as College of Agriculture, the University of Mauritius (UoM) currently dominates the Tertiary Education Sector in Mauritius with a Gross Tertiary Enrolment Rate (GTER) – of 43%, that is 11,900 students. The university's vision is to be a leading international university, bridging knowledge across continents through excellence and intellectual creativity (Herana report, 2007). The university's current strategic plan, Strategic Directions 2006–2015, has the following six strategic directions:

1. Knowledge creation
2. Knowledge diffusion
3. Investing in resources
4. Quality culture and good governance
5. National, regional and international collaborations
6. Community outreach

The University of Mauritius enjoys a good reputation with local employers and excellent feedback from external examiners hailing from reputed international academic institutions. A public university, deriving much of its income from public funds, the UoM also attracts the

best students freshly out of secondary schools as well as highly qualified personnel.

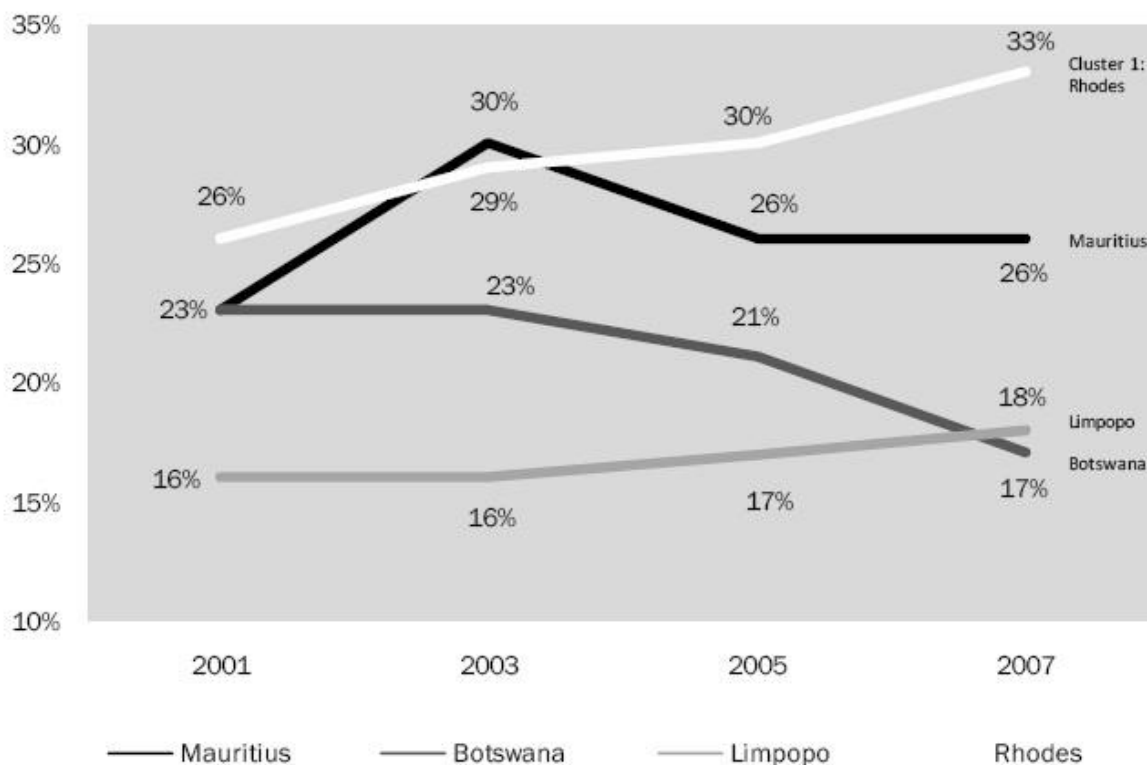


Figure 1: Comparison of science and technology graduation rates in four African Universities.

Figure 1 shows that UoM's and Rhodes' performances in producing SET (Science, Engineering and Technology) graduates were well above those of the other two universities of Botswana and Limpopo. UoM's average cohort success rate for 2001–2007 was 78%, Botswana's 55%, Limpopo's 50%, and Rhodes' an exceptionally high 88%. The data indicate that UoM was, in terms of its SET graduate outputs, an efficient university (Bailey et al, Herana report, 2007).

At present, the University receives around 8000 applications for its courses and the actual intake is around 4,000 students every year. It is not clear whether the other 4,000 students are not admitted because of unsatisfactory levels to be able to join the courses, or whether they would have meanwhile opted for other universities- what is clear however is that the UoM will not enjoy this position of dominance for too long. Mauritius has set itself the target to increase the gross tertiary enrolment ratio from 43% to 70% by 2015. The island is also targeting to attract 100,000 foreign students by 2020. According to UNESCO, sub-Saharan Africa has the highest growth in tertiary enrolment. Mauritius can be an ideal platform to attract students from Sub-Saharan Africa for higher education. The regulatory framework is already in place to allow foreign universities and tertiary educational institutions to legally start operations in Mauritius. The Board of Investment (BOI), a governmental body, organised the Mauritius International Knowledge Investment Forum (MIKIF) 2012 on the 30th January at the Intercontinental Resort, Mauritius with the objective to showcase the various investment opportunities in Mauritius to the global education community. The event saw the participation of Investors and CEOs of property development firms, policy makers, university administrators and academics from India, Singapore and the UK keen to forge strategic alliances and make inroads into new markets. In the face of such tremendous competition from tertiary education international giants (Amity University, Middlesex University (UK), Vatel Hotel School (France), Birla Institute of Technology (India), London of Accountancy (UK), NIIT (India), Limkokwing University (Malaysia) and JSS Academy (India) who have set up campuses on the island. The University of Mauritius is poised at a crossroad where internal university

politics (with the current restructuration), omnipresent technological transformations in education and government policies of democratising tertiary education force us to reconsider the learners' perceptions of the contemporary higher education scene and perceive these learners more as "partners" for our further development. Reports from Universities that have "opened up their content" prove that OERs are an invaluable means of showcasing institution's intellectual outputs, promoting university profile and attracting students. Butcher (2010) mentions that "it is clear that universities should understand that their real potential educational value lies in their ability to provide effective support to students through their ability to provide intelligent assessment and critical feedback to students on their performance- the focus being less on the content, but moreso on the quality of service." The efforts of universities like the Massachusetts Institute of Technology and the Open University, UK to release their content as OER reflects an understanding of the needs of today's students, as well as an effort to lead the OER movements and benefit from the publicity that such leadership generates. Butcher (2010) predicts that "in such an [competitive] environment, it is foreseeable that reputation will grow by making Open Educational Resources and Higher Education content available as a way of publicising competence in providing support, assessment, and accreditation." However, Geser (2007) had already pointed out that "the established culture of academic and higher education institutions does not particularly foster the creation, sharing and re-use of Open Educational Resources. In universities, greater value is often attached to research than to teaching, in particular when it comes to academic promotion. Hence, there is usually little incentive and support for faculty to experiment with innovative IT-enhanced forms of teaching and to excel in producing and sharing educational material."

### **The Survey Instrument to evaluate Use of digital resources and faculty penchant for innovative teaching methods.**

An online questionnaire was developed using the free online tool 'Survey Monkey'. The questionnaire is attached in Annex 1 and can also be found on WikiEducator [http://wikieducator.org/File:Olnet\\_Questionnaire.odt](http://wikieducator.org/File:Olnet_Questionnaire.odt). The questionnaire (inspired by a similar doctoral study on OER use and reuse by Dr Chris Pegler comprises of elements from Areas 1 and 3 of the document presenting the official list of best practice in the implementation of open educational practices, as defined by the Open Educational Quality Initiative (OPAL 2011). It has to be mentioned, however that the term "Open Educational Resources" was refrained from being used since this would have constituted a technical jargon that many academics would not have understood. "Digital resources" or digital material were used instead, while pertinently asking about OERS. The questions were implicitly directed at finding out whether, at all, academics were aware of Open educational resources and how they integrated these into their lectures. Of main interest, the following dimensions were investigated:

1. Extent of using and repurposing OER.
2. Availability of a process for OER creation.
3. Degree of sharing of OER and OEP
4. Extent of working with open learning architectures
5. OEP usage: This dimension describes the degree to which open educational practices are embedded as a reality in the organization's teaching, learning, and other everyday processes
6. Quality concepts for OEP: 'Value' of teaching (in comparison to research activities in the institution)
7. Level of knowledge and skills:
8. Digital literacy

Relating to the proportion of digital material used for their classes, shows that 66% of the academics use only or mostly digital material – showing a definite shift from physical textbooks towards digital resources.

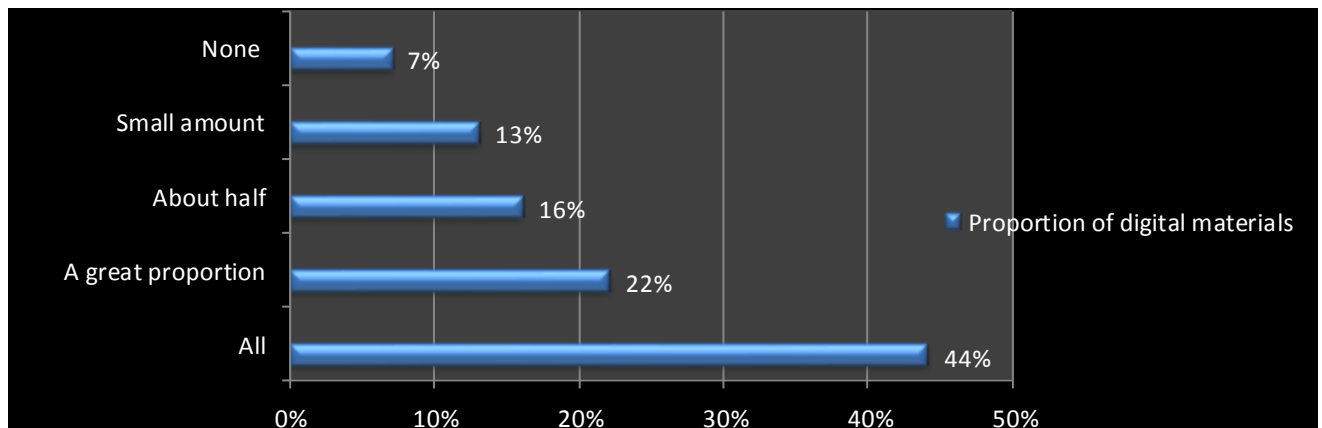


Figure 2: Proportion of digital material used for classes

Only 9% of the lecturers provide content online, which means that most of the time (67%) they are delivering face-to-face lectures using mostly digital material. The question then arises whether the lecturers are creating their own resources from scratch or using resources available online.

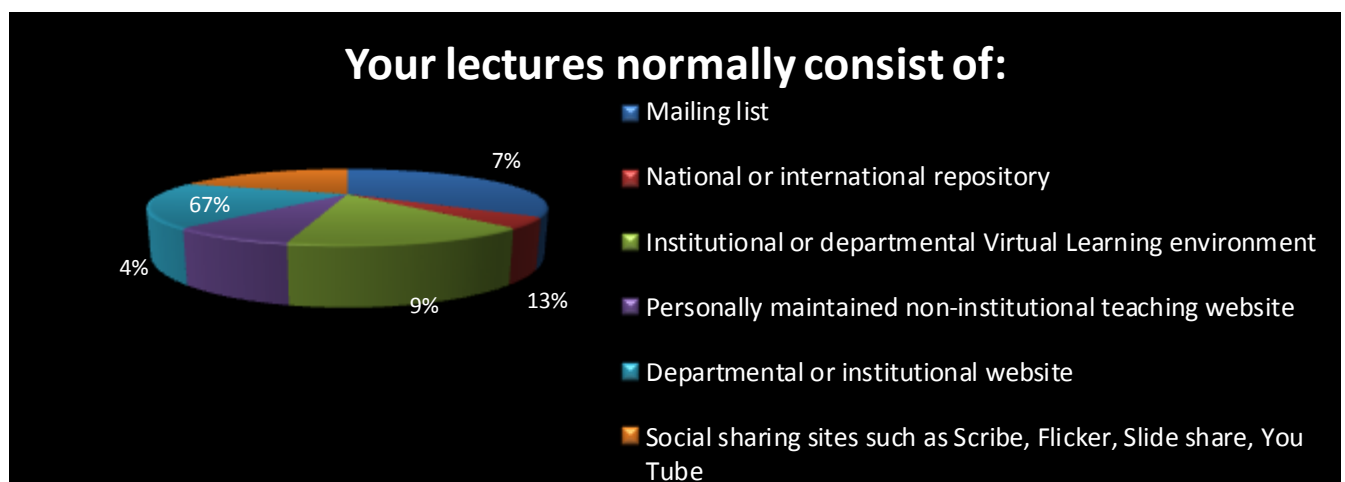


Figure 3: Lecture Delivery methods

Question 9 addressed this issue of reuse by looking at the perceptions of academics at the UoM with respect to using and reusing content online. The question was formulated as “**9. Please indicate whether you agree, are indifferent, or do not agree with the following statements pertaining to using material available on the internet. Please specify any other concern you may have.**”

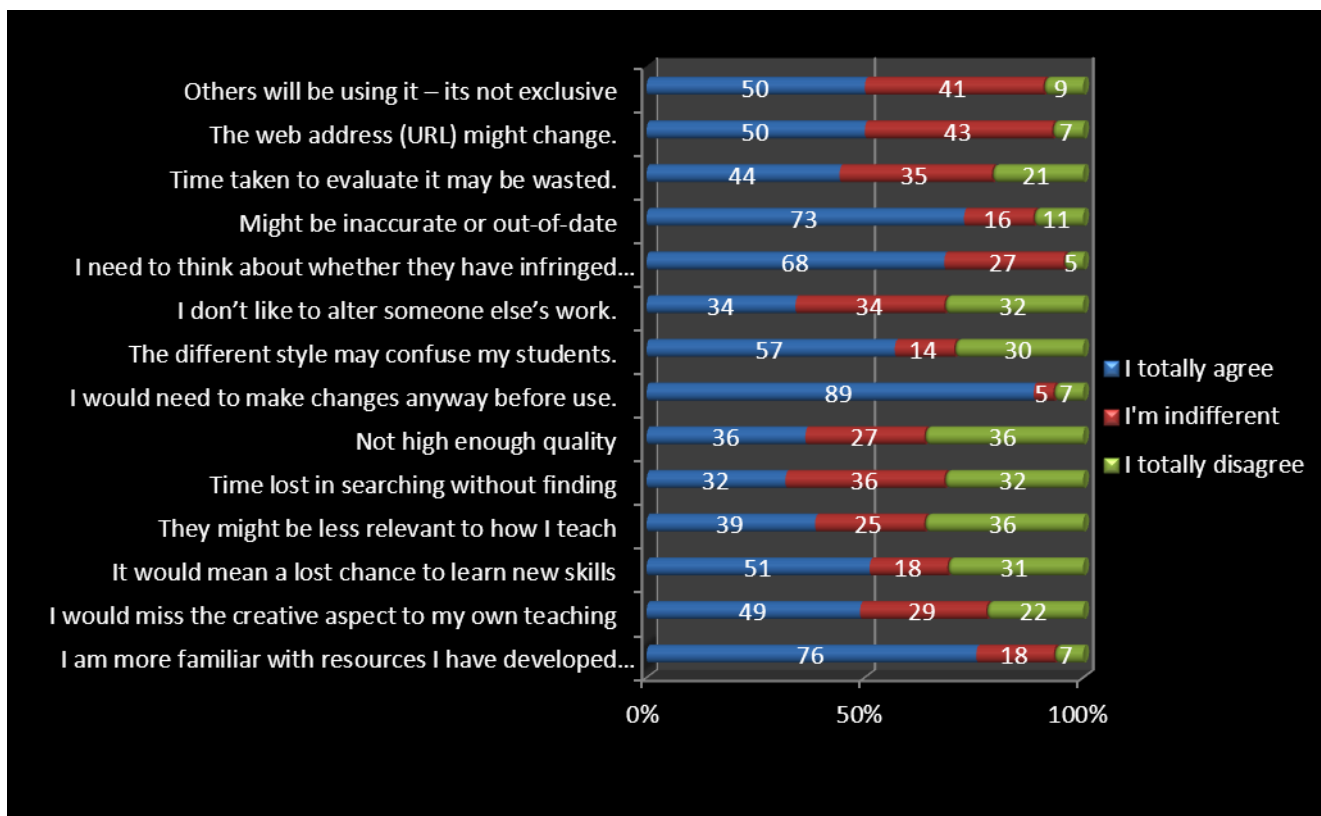


Figure 4: Perceptions of repurposing Online material

Looking closer at the results, it is found that opinions are pretty much divided: 76% academics prefer creating their own resources since they are more familiar with the contents. Half of them would miss the creative aspect, and they prefer the chance of learning new skills. 89% mention that they would need to make changes to existing material, while 68% do think of copyright infringement. On the other hand, most of the academics are either indifferent to relevance of the materials to their teaching, or are not so much concerned about quality of existing resources. 66% would not find it unethical to alter someone else's material and a similar proportion do not think that time is being wasted in searching for material online.

Two academics sent additional comments:

#### Comment 1

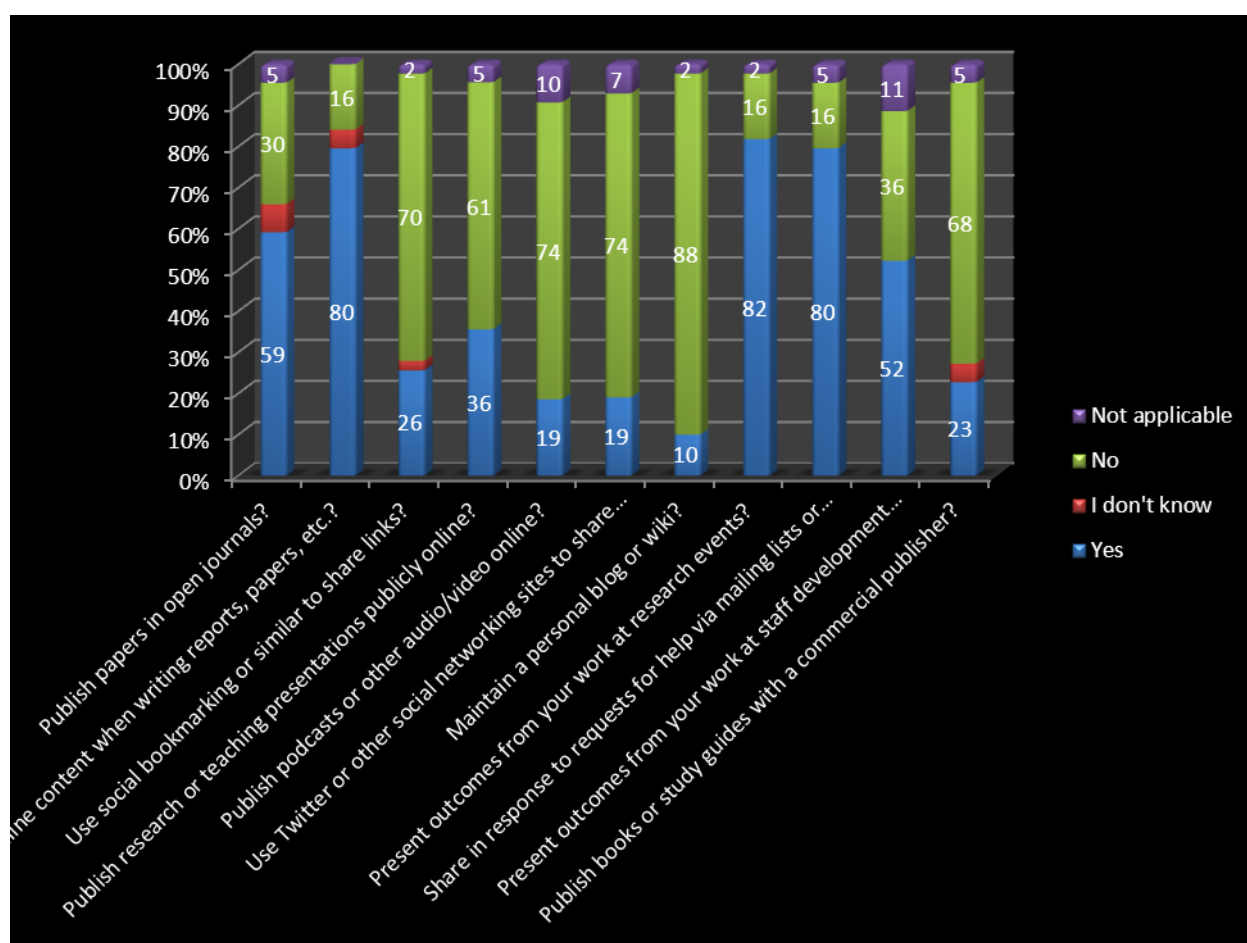
*"Personally, I 'dont care much' (without any bad connotation) about online materials because I noted most students do know how to get information online; sometimes better than myself, more up to date info ... Thus, even though these online mats are not 'officially' included in my course, students do HAVE ACCESS to them; after all, internet facilities are provided to them, and most do have ADSL at home (I dont!). My main emphasis for effective teaching to the 'rather' weak students in Physics is to make them understand the basics and for these, I do have additional tutorials ... Also, in absence of 'someone' present, they do not concentrate on what is written; ie they look at things but do not see things! Eg, Nelkon and Parker have written a very good HSC physics book where things are explained in good and clear english. When studying Phenomena like thin film interference during lab sessions, I noticed that students still cannot understand what happen, cannot understand the physics behind the phen., even though everything is clearly explained. I usually have to force them to read aloud and translate in creole each sentence and explain. Then we discuss. So, even though online mat would be most interesting (even to myself!), this may not be applicable to most 'youngsters' who are not capable of looking at something 'sincerely, without bias'."*

## Comment 2

*“Materials on the net may not be accurate and it has to be used with caution after careful evaluation and verification.”*

The fact that students are more proficient at searching for resources on the net is not surprising, however, it should be noted that academics are provided with refunds for their internet usage at home as incentives for more research and enhancing their teaching with e-learning material.

In an attempt to evaluate the culture of sharing and collaboration at the UoM, a question was formulated pertaining to sharing resources other than with their students and more in relationship to research and scholarship:

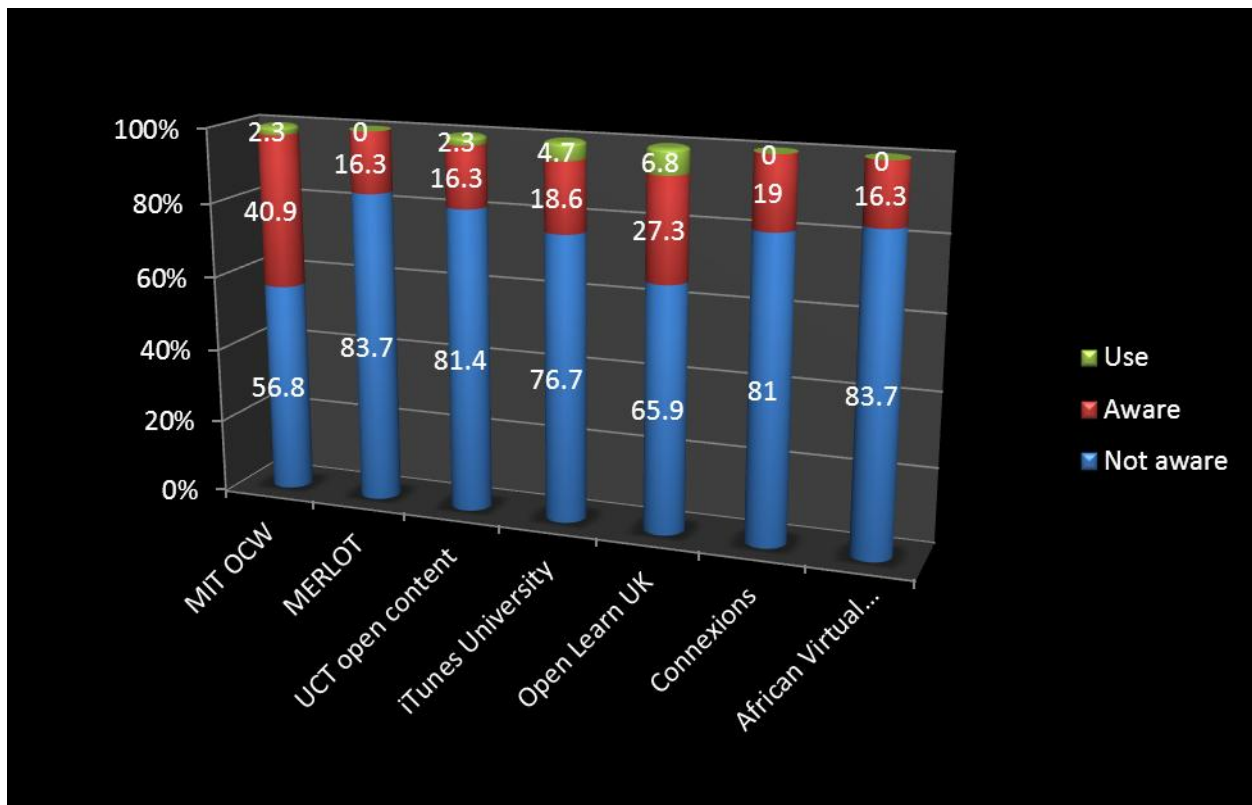


**Figure 5: Academic web-presence and collaboration**

While it came as no surprise that most of the academics do disseminate results at research seminars and conferences, 36% of UoM academics do publish research or teaching presentations online and 19% do use social networking sites for sharing information.

Incidentally however, awareness and use of existing Open educational resources is quite disappointing. As the chart below shows, while 43% of the lecturers are aware of MIT OCW, only 2% actually use their contents, and around 7% use material from Open learn. Although the numbers are quite small in themselves, the reusability factor in the design of materials might have contributed to this “preference” for OpenLearn material.





**Figure 6: Awareness of OER Institutions**

Ehlers (2011) relates this reluctance in OER uptake in higher education to that fact that the current focus in OER is on expanding access to digital content with little consideration for pedagogical approaches and enhancing quality and innovation in teaching and learning. He recommends that beyond access to OERs we should be thinking of embedding OERs into our teaching and learning practices. This reinforces Butcher's (2010) idea that simply providing content freely available for use and adaptation will not necessarily improve higher education delivery and that "effective use of educational content demands, amongst other requirements, good educators to facilitate the process" who in turn need to be equipped with the necessary knowledge and tools to be able to harness the transformative potentials of OERs.

Open educational Practices entailed designing an online workshop which was competency-focussed, based on the constructivist paradigm of learning and required the creative and collaborative engagement of learners. The parallels with learner-centred teaching and learning are clear and we drew upon this paradigm for the formulation of discussion topics in the reflective forums created in the Moodle platform at <http://learningspace.co.za/moodle/login/index.php>.

### **Open Educational Practices and Learner-Centred teaching and learning.**

Learner-centred teaching is an approach to teaching that is increasingly being encouraged in higher education. Rather than focusing on simply delivering their lectures to their classes, learner-centred teachers employ multiple teaching strategies. This approach emphasises a variety of different types of methods that shifts the role of the instructors from givers of information to facilitating student learning. Learner-centred approaches are characterised by the three main factors:

- constructivism (based on the belief that learners develop new knowledge through building on previous knowledge and experience),

- deep learning (where learners actively engage with meaning), and
- learner self-responsibility.

Bonk and Reynolds(1997) had suggested that for learner-centred approaches, institutions needed “to create challenging and novel environments that help the learners link new information to old, seek meaningful knowledge and think about their own thinking. Creation of challenging and novel environments entails changes in perceptions of higher education teaching, “where learners given the freedom to explore areas based on the their personal interests, and who are accompanied in their striving for solutions by a supportive, understanding facilitator not only achieve higher academic results but also experience an increase in personal values, such as flexibility, self-confidence and social skills” Rogers (1983).

Building upon aspects of the learner-centred paradigm, the next paragraph describes the objectives and results of the online workshop which formed part of the TAL 5012 Educational technologies.

### **TAL 5012 –Educational Technologies and the opportunity of integrating learner-centred teaching at the University.**

The *Postgraduate Certificate/Diploma/MSc Teaching and Learning in Higher Education Programme* was approved at the 431<sup>st</sup> Senate meeting in November 2001. Since its launch, the delivery was carried out by overseas resource persons, mainly South Africa. UoM academics have been unanimous in seeing the benefit of this module which was in fact commended by the Quality Assurance Audit in 2005. The aim of this module is to provide an overview of developments taking place in Educational Technology as applicable to Higher Education, through the different ‘generations’ of mode of delivery. It provides broad insight into the use and implementation of various strategies in the learning environment. It is expected that as a result of working through this module, the lecturer will be able to:

- Distinguish between methods and products of new Technologies.
- Determine the role of new Technologies in enhancing Teaching and Learning.
- Identify conventional and modern techniques of Teaching and Learning.
- Assess the limitations of Educational Technology.

In contrast to previous sessions, the current TAL 5012 was held totally online since the facilitator had unfortunately had an accident and was unfit for travel.

Thanks to the marvels of educational technology and with the assistance of the VCILT, the module was still run as scheduled and in a Trojan horse tactic, dimensions of Open Education Practices were incorporated in the module through learner-centred approaches. The main topics to be covered during the module pertained to:

1. Social Presence
2. Automated assessment
3. Authentic assessment
4. Collaborative learning.

At the end of the program, there was a noticeable change in the way that these academics perceived online education and how they would use educational technologies to enhance their teaching.

The topic of social presence in an online environment was introduced, carrying dimensions of openness in communication pathways and creating a suitable atmosphere for respectful exchange (Gunawardena & Zittle, 1997). Of particular interest, one of the participants summed up what she had learnt from this session mentioning:

*“Social presence is crucial in the creation of a communal, group-specific ‘language’. This is especially helpful in the creation and maintenance of friendship in the virtual classroom. Enhanced solidarity between participants leads to the creation of a “community of practice” (Wenger 2001) where the e-learning space acts as the social glue between facilitator and students.”*

The shift towards providing more authentic learning experiences and giving more ownership to the learner as a reflexive thinker and active participant in the learning process were captured in the following reflection:

*“As I went through the toolbox, one activity titled ‘fairy tale letter’ caught my attention. I was also impressed by the detailed illustration about how students can be familiarised with rubrics so that they can carry out self-assessment tasks. I am planning to introduce a combination of both activities in one of my oral skills session. I would like to ask students to ‘write to your favourite theorist letter’. Then, similar to the toolbox, I would like to provide them with simplified rubrics that should help firstly in peer assessment and secondly in self-assessment. At the end of that session, tutor assessment, peer assessment and student assessment can be compared to each other. The tutor can then explain the implications of the findings. I’m hoping that this activity will give rise to a degree of reflexivity in my students’ performance.”*

On the topic of increasing collaboration, participants mentioned:

*“Heterogenous groups work better... (I was not fully convinced about that before tackling this activity)... We need to ensure that problems which arise from within a group are tackled as quickly as possible before they get out of proportion and spoil the group dynamics. This can be ensured by informal meetings with the members.”*

### ***How is the new knowledge and/or skills, about collaborative learning going to influence my classroom practice?***

*First of all, I must admit that after 8 years of lecturing, it’s only during the past few days that I read extensively about collaborative learning. During 8 years, I had my own opinion about collaborative learning. Right now, there are so many things just crammed, and which I’d like to put into action, experiment, and see the results...I found this extremely enriching:*

*“Teachers activate students’ prior knowledge by asking them what they already KNOW; then students (collaborating as a classroom unit or within small groups) set goals specifying what they WANT to learn; and, after reading, students discuss what they have LEARNED. Students apply higher-order thinking strategies which help them construct meaning from what they read and help them monitor progress toward their goals.”*

### **Conclusion**

As current waves of openness in education will surely hit the shores of our insular classrooms through globalisation and the World Wide Web, we need to be prepared by acknowledging, channelling and correctly harnessing newer paradigms in education. For now, the paradigm is still to lock away the content produced by academics for classroom diffusion. In a blog report by Vollmer (2010), Wayne Mackintosh Director of the OER Foundation in New Zealand, aptly puts it, *“Any researcher worth their salt knows that a thorough literature review of existing knowledge is the natural starting point in resolving a research question. In our research, we have*

*no issue with sharing and building on the ideas of others, yet in our teaching there is a perception that we must lock our teaching materials behind restrictive copyright regimes that minimize sharing.”* However, times are changing, and whether it would be our learners who would be pointing us to the right direction is yet to be seen, however, opening up our teaching to encompass the learner (as a guide) will surely improve the quality of teaching. There is a great potential for transforming current academic practice at the University of Mauritius through Open Educational practices. The culture of sharing and collaboration is being fostered through open and online technologies. More and more academics look towards digital material for creating their course content and are less resistant to new methodologies. They see the benefits of inculcating learner-centred approaches both in their teaching and learning practices. They find that being the “sage by the side” has tremendous leverage for increasing student responsibility and engagement in the classroom. While the results of the study are quite conclusive, further research needs to be done through OER workshops to create awareness about the legal and pedagogical gains of using OERs in teaching. Also, to what extent would academics allow external scrutiny into their teaching is still to be determined. The phrase “Build it and they will come” (from the movie “Field of dreams”) clearly does not relate to repositories for open content. Larson and Murray (2008) more appropriately rephrased it to: **“Build it and they will not come unless you design a system to promote and encourage access”**. Many of the problems with reuse of open content in developing countries can also be found in developed countries but the problems are much greater in developing countries.

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# **Assessing the effects of Open Education on Learning, Performance and Bildung: Methodological considerations**

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## **Abstract**

This paper attempts to provide an additional dimension to the tremendous changes that have been occurred in teaching and learning throughout the past years. In this process there has been an increased access to resources (Open Educational Resources) as well as extended possibilities for learning (e.g., Massive Open Online Courses). However, it remains ambiguous whether learning with OER or in MOOCs will bring added value for the individual or the educational institution. As learning theories have little to offer in this regard, a broader concept that can be utilized to explain the inherent processes when learning in open and complex settings is introduced. This concept, originated in German philosophy of education, is Bildung and entails in its classical understanding the interaction between the individual and the world. It has been continuously updated to capture significant developments in society and educational practices. Yet, up to now Bildung has not covered the phenomenon “Openness” in education. Consequently, an expanded concept of open Bildung is proposed and some methodological aspects are discussed related to the question, how to trace and assess Bildung in open education. In this regard, it is argued that qualitative approaches are warranted as they are able to reconstruct the various implicit actions of the learner that occur when engaging in open online environments. Moreover, questions such as how do learners successfully navigate through an open complex course can be tackled. Exemplary use of such methods is provided in the frame of Massive Open Online Courses.

## **Keywords**

Open Educational Resources, Qualitative Research, Bildung, Massive Open Online Courses

## **Introduction**

The rapid growth of Open Educational Resources (OER) and their related siblings such as Massive Open Online Courses (MOOC) challenge many of the current and traditional practices in teaching and learning (Downes, 2011). OER are based on the simple but powerful idea that the world's knowledge is a public good like water or idea and thus access to it should be made open to everybody. With the advent of modern ICT and Social Software Applications this has become more feasible than ever before. Numerous initiatives and projects have been established since the initial launch of the MIT OpenCourseWare in 2001. Among them are the Open University UK with OpenLearn or the Connexions portal. They have raised tremendous attention all over the world and practitioners as well as scholars are beginning to explore the innovative potentials being offered by open courses (McAuley, Stewart, Siemens, & Cormier, 2010).

However, these open courses are quite contrary to traditional learning resources that provide structured content for formal educational contexts (Lane & McAndrew, 2010). Learning is now much more informal, yet less predictable and controllable, especially with the recent advent of social media tools that have generated an architecture of participation. This has raised a lot of enthusiasm especially since MIT has recently announced that their free courses can now be studied and assessed completely online (<http://web.mit.edu/newsoffice/2011/mitx-education-initiative-1219.html>).

While there has been some research on the diffusion of OER through (formal) institutional networks (van Dorp & Lane, 2011), on the attitudes of academic staff (Rolfe, 2012) or on peer recognition (Schmidt, Geith, Håklev, & Thierstein, 2009), the actual use of OER by individual learners remains vague. Indeed, there have been some case studies that can be used to demonstrate empirical evidence (e.g., McAndrew et al., 2009), however, the methodological approach to compile data has not yet been sufficiently dealt with. Therefore, it is the purpose of this paper to start a methodological discussion. Moreover, it is intended to provide a comprehensive conceptual framework that can be applied to open online courses and open educational resources.

### **Learning and teaching in open complex worlds – some conceptual remarks**

Learning in the “old days”, which is however just a few years ago, has been quite different compared to current learning practice. Due to a fundamental shift in the cultural values of the society, learning becomes more open and more complex because of its network character (Dirckinck-Holmfeld, Hodgson, & McConnell, 2012). The commitment to openness in education can be conceived as a social and political project with roots going back to the philosophical movement Enlightenment (M. Peters, 2008).

Nowadays it seems also common to “hack education” (Kamenetz, 2010), i.e. to digest information to be used for various learning purposes. The approach is unconventional and tinkering as it uses the sources in innovative and unforeseen ways. It is comparable to the way programmers are using open source software to tailor the code for individual purposes. Mostly these are simple means used creatively such as in the development of Linux or Twitter. Skills and competencies that have been acquired in this open informal learning process can be demonstrated with so-called badges (see for example Mozilla Open Badges Project: <https://wiki.mozilla.org/Badges>). In general, there is an ongoing movement towards more openness in education that encouraged universities to open up their gates and permit access to those that could not attend Higher Education for various reasons (Iiyoshi & Kumar, 2008).

As these and other doors are now more open than ever before, self-regulated learning seems to be the key factor for success. Learners are now more urged to decide what resources they want to study at what time and via which device (Dettori & Persico, 2010). Thus, the responsibility for the learning process and for the result increases. This is also reflected in the changed teaching model that is now “a guide on the side” as opposed to the previous “sage on the stage” (Geser, 2007). However, models on self-regulated learning are still based on traditional classrooms or their electronic counterparts, Learning Management Systems (LMS) and have not yet taken open online course into account. On the other hand, it still remains relatively vague as to how independent learning can be supported to ensure that participants actually benefit from the educational potential. This is becoming even more demanding in times where emerging ICT provides rich access to information and fosters the ability to work with other people around the globe (Kop & Fournier, 2011).

Thus, new competencies and skills are needed to master the challenges and to find a way to an efficient and successful learning process. These skills cannot be derived from learning theories as they are limited to more or less predefined learning contexts (classroom-based, e-learning etc.) and cannot provide explanations for changed realities. As pointed out by Engeström (2001) (2001): “In important transformations of our personal lives and organizational practices, we must learn new forms of activity which are not yet there. They are literally learned as they are being created. There is no competent teacher. Standard learning theories have little to offer if one wants to understand these processes” (p. 138).

A concept that goes beyond pure learning theories can be found within the German tradition of *Bildung*. It is thus very unique in the world with its distinctive, yet heterogeneous meanings and implications. It has no counterpart in the Anglo-American context; the concept of education is somewhat related, but only to a certain extent (Gutek, 2004), e.g. the association with knowledge and understanding (R. S. Peters, 1970).

*Bildung* can be traced back to the heydays of the philosophy of idealism with key representatives such as Humboldt who is most known for his theory of *Bildung*, which states that each individual should fully unfold all his/her abilities and skills into one force. Thus, *Bildung* is an activity for the individual, whereas education in the Anglo-American understanding typically refers to intentional external processes aimed at influencing the person.

A classical definition of *Bildung* refers to a free (i.e., unconditioned) interplay between the human and the world in order to fully unfold all the innate potentials (self-development). It was conceptualized as a fundamental right for every human being, regardless of social class.

However, given the social transformations and challenges of the current day and age, it may be questioned whether such an old-fashioned concept is still of importance for educational practices. We will present some thoughts to put forward our argument that *Bildung* is actually becoming even more significant. By doing so, we will refer to the understanding of *Bildung* as “(...) the ability to go beyond the present state of affairs and to transform the structures and prevailing rules of this form of life” (Peukert, 2003, p. 106). Yet, *Bildung* is also said to reflect the current conditions and signatures of the society. As has been argued above, openness is such a signature which shall be embraced by theoretical concepts. This has not been done so far; therefore, an expanded conceptualization for a theory of open education (*Offene Bildung*) is proposed (Deimann & Farrow, 2012). According to this view, open educational resources and open online courses do not only provide a significant increase of resources and materials they are also very likely to alter forms of *Bildung*. The specific philosophical underpinning of open education which is to promote exchange of knowledge all over the world and to increase human intellectual capability (Piedra, Chicaiza, López, Tovar, & Martínez, 2009) highlights the value of *Bildung* as an important potential for the development of the personality. Nevertheless, *Bildung* will become even more unpredictable.

In the following section, a methodological framework will be introduced that is based on this expanded perspective of *Bildung*. It will be discussed how to capture traces of *Bildung*.

### **Methodological framework to assess *Bildung* in open online environments**

The search for methods to detect and assess *Bildung* and learning in open education is based on the special affordances of *Bildung*, i.e. the complex interplay between the individual and the world. It seems therefore plausible to adopt qualitative methods for this quest. These methods have been developed or refined based on the theoretical assumptions of *Bildung* with the purpose to explore the potentials of complex digital architectures (Jörissen, 2011). This refers to the constitution of the subject and its ability to be able to orientate oneself in open complex realities. These processes need to be detected and unfolded. Since most of the related activities are stored as implicit knowledge and not accessible by the individual it cannot be observed directly. This implicit knowledge is, however, guiding the subject's practices. Thus, it has to be reconstructed to “look behind the scenes” of *Bildung*. The rules and practices, their related contexts and experiences are to be understood and generalized with regard to general actions. Reconstructive social research takes a switch from external to internal perspectives of action. Moreover, it does not “(...) try to control the phenomenon, but to reconstruct the conditions of its formation, e.g., the natural standards of communication and interaction that bring about the



phenomenon. Thus, they focus on how constructions of reality emerge as what they are” (Przyborski & Slunecko, 2012).

Taken together, reconstructive social research is based on the following characteristics:

1. Use of open, non-standardized methods of inquiry: While standardized methods in empirical research strive for methodical control by structuring in advance the course of communication between researcher and interviewee, control in reconstructive research takes place through investigating the relevant differences in speech and the interpretation framework. Here subjects should be given the opportunity to develop their own systems of relevance. Thus, less interference leads to more control.
2. Orientation towards a reconstructive methodology: From a methodological perspective, reconstructive social research is based on Alfred Schütz's (1983) work in which he highlights the definition of scientific categories as "second degree constructs", which carry out a re-construction of those "first degree constructs" formed in people's social environment. In this sense, reconstructive social research is involved in a reconstruction of implicit stocks of knowledge and the rules of social behaviour.
3. A factual approach to formulating theories: In contrast to methods that test hypotheses, the emphasis of reconstructive research lies not in examining theories, but in generating them. Fundamental to this approach is acceptance of the premise that a theory is only appropriate to an object if it was developed from that object; a premise formulated in Grounded Theory (Glaser & Strauss, 2008).

In the next section, exemplary use of a reconstructive approach is provided in the frame of Massive Open Online Courses.

### **Exemplary Use in Massive Open Online Courses**

With regard to open courses, reconstructive social research can help to unfold the actions of the participants, in particular those relating to guiding and navigating through complex realities. In this regard, the prevailing use of social media tools is prone to obtain access to individual's thoughts and reflections. This has been demonstrated in current research using a virtual ethnographic approach (Hemmi, Bayne, & Land, 2009). For Blogs it revealed a negotiation of identity with regard to different environments (face-to-face, online) and an exploration and regulation of subjectivity through learning. This critical examination of oneself (and of the world) is the core aspect of *Bildung*. It thus represents a broader framework which can be used to derive actions and reflections within digital artifacts. An intermediate step, however, is to map learning in online open courses and to compile the major ingredients of learning processes. In this regard, Kop and colleagues (2011) present a cyclical model of online learning that goes through the steps (1) information aggregation, (2) planning learning activities, (3) using learning support, (4) reflect and repurpose learning information and resources, (5) evaluation of the learning process. In their research the importance of making connections between peers and between learners and facilitators could be demonstrated. Moreover, it was argued that “Meaningful learning occurs if social and teaching presence forms the basis of design, facilitation, and direction of cognitive processes for the realization of personally meaningful and educationally worthwhile learning outcomes” (p. 88). On the other hand, learners oftentimes have to face challenges and ambiguity in a MOOC. This is starting point for processes of *Bildung* in the form of transformation of the current framework for reflection and learning, i.e. the strategic approach to navigate through complex open worlds. Social media that are a constitutional element of a MOOC can then play also an important role in transformative *Bildung*. To determine this role is thus an urgent task for future research on

open online courses. A recent example for such a process is the discussion about the nature of educational research that has been initiated in a Blog post by Tom Reeves (“Can Educational Research Be Both Rigorous and Relevant?”<sup>9</sup>). In this discussion, several scholars expressed reflections concerning the importance of rigorous research in terms of personal career ambitions. However, it has also been argued that there is actually no clear concept of academic rigour. This can be interpreted as changed perceptions of what is meant to be classical or traditional research.

Certainly, there are many more cases of such discussions that can be understood more fully with the help of reconstructive methods. It will be also interesting to observe how social media evolve as a significant tool to shape experiences of Bildung. A next step for such research might be to map certain patterns at certain time in a MOOC. For instance, at the beginning there is naturally much more traffic via social software than at the end. However, how much of this traffic will be <http://www.educationaldesigner.org/ed/volume1/issue4/article13/index.htm> of importance for subsequent learning episodes? And how are the motives of early learners related to their actions?

### Summary and conclusion

Given the far-reaching transformation within Higher Education renewed theoretical concepts are needed to embrace the potentials of openness for individuals and organizations. As learning theories are too limited for that purpose, Bildung has been introduced as a broader and more substantial theory. Yet, Bildung has not yet dealt with the current shift towards more openness in education and has therefore been expanded. Such an approach can help to describe and explain the various forms in which learners find orientation in open complex worlds. More specifically, Bildung enables researchers to study inherent processes much more substantially compared to pure learning theories. As open online courses (MOOCs) continue to evolve, it is extremely challenging to predict possible scenarios neither for “stand alone” MOOCs nor for mixed models (e.g. in collaboration with a Higher Education institution). However, researching Bildung and based on a reconstructive approach can help to derive instructional conclusions.

This research agenda shall help to progress in research as well as in developing new digital pedagogies. There is a clear need for such research as open online courses are moving and evolving at an accelerated speed.

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# **Beyond Optimism: Why the Future of OER/OCW is Assured**

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## **Abstract**

Members of the OER/OCW movement are properly occupied with the current efforts of importance to the movement—increasing the supply and usage of OER/OCW, finding sustainable models, embedding OER/OCW into government and institutional contexts, and seeking ways of certifying knowledge gained through open content. As educators, we are motivated by the high-minded goal of improving access to education, throughout the world, through technology and free learning opportunities. However, between the focus on issues of immediate concern and the shining light of our overall goal, there is a middle ground that is not well understood by many OER/OCW proponents. That middle ground is composed of large-scale forces that are impacting education and together create an imperative for the OER/OCW movement—a movement that is so important to these trends that the vision we have for the future is inevitable. This paper describes these trends and the part that movement plays in them.

The first and most important trend is the movement toward universal access. First identified and described by Martin Trow in 1974, universal access is the third stage in the evolution of higher education, following the movement from elite to mass higher education. There are two components of universal access. The first is the traditional notion of providing access to higher education to people who otherwise could not take part because of geographical or financial limitations. The second component is more subtle, but no less important or visible—the breakdown of boundaries, sequences, and distinctions between learning and life. This paper describes how universal access is becoming clearly evident and will offer some examples of how OER/OCW is a major component in the advancement of universal higher education.

The second trend is the “commodification” of education. A good or service is “commoditized” when it becomes ubiquitously available at no or very low cost. There are clear patterns of behavior that occur when an important aspect of an industry becomes commoditized. These patterns are evident in the commodification of content (Google, Wikipedia, YouTube) and communications (Facebook, Skype, Twitter), both of which are important elements of education. Education itself is showing signs of becoming commoditized. Commodification pushes the “value proposition” to the periphery of the good or service. This paper describes the “value add” shift in higher education, what it means to the OER/OCW movement, and how institutions can take advantage of this trend.

The third trend is the increasing cost of higher education and the demands for institutional accountability. The OER/OCW movements clearly address both elements of this trend by pushing down costs and creating more transparency in the teaching/learning process.

## **Keywords**

OWC, OER, Universal Access, Commodification, Accountability, Certification, Learning Authentication.

## **Introduction**

Members of the OER/OCW movement are working to increase the supply and usage of OER/OCW, find sustainable models, embed OER/OCW into government and institutional contexts, and certify knowledge gained through open content. As educators, we are motivated

by the high-minded goal of improving worldwide access to education through the use of technology and free learning opportunities. However, there is a middle ground that is not well understood by many OER/OCW proponents. That middle ground is composed of large-scale forces that are impacting education and together create an imperative for the OER/OCW movement—a movement that is so important to these trends that the vision we have for the future is inevitable. These large-scale forces—universal access, commodification, and cost containment/accountability, are impacting education and creating a bright future for the OER and OCW movements.

### **Universal Access**

Universal access was first identified and described by Martin Trow in 1974. According to Trow, universal higher education is the third stage in the evolution of higher education following the movement from elite to mass higher education. The concept of universal access goes way beyond the tremendous increase in the ability for individuals and groups to find and use learning opportunities and materials. Universal access also brings with it the phenomenon that learning can be broken down into smaller chunks and in sequences that were not possible before. Learning can now take place in our day-to-day activities as never before; during lunch breaks, on commuter trains, and meetings. Universal access is necessitated because the world's population must rapidly adapt to social and technological change.

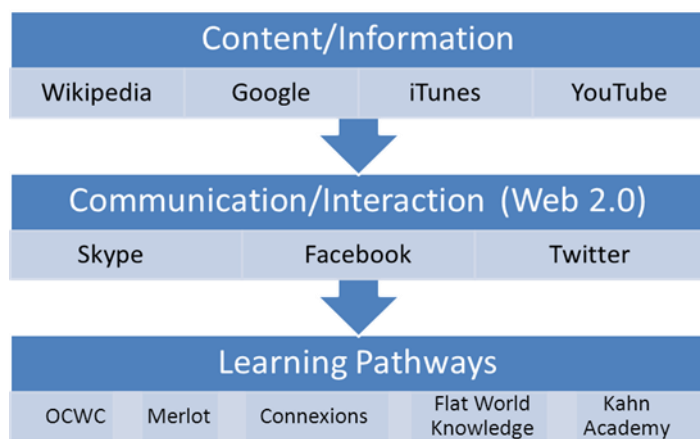
Current institutions and teaching structures (degrees, colleges, and universities) are not able to fully serve this universal social goal. Therefore, teaching and learning will be increasingly characterized by a great diversity of providers with no common standards governing them. However, to compensate for the lack of common standards, we're seeing a shift to "value adds." The evaluation of education, at the organizational and individual level, will be based on the actual results of education in measureable skills, abilities, or useful knowledge. The failure of traditional higher education institutions to provide evidence of value adds and adjust to the changing needs of its audience will lead to something we are already seeing—the questioning of the special privileges and immunities of academe.

The OER/OCW movement is entirely synchronized with the inevitability of universal access. In fact, several of the characteristics of universal access (the breaking down of learning boundaries, the diversity of providers, and lack of standards) are being played out now within the framework of the open movements. The recent interest in "badges" and the concern over learning authentication, validation, and certification in the absence of common standards is clearly related to the growth in open educational opportunities. OER/OCW is both a cause and beneficiary of the trend toward universal access.

### **Commodification**

The second trend is the "commodification" of education. Education has advanced toward commodification in that it has, through the OER/OCW movements, become ubiquitously available at little or no cost. Education's commodification follows the two elements of commodification that are essential to education—content and communication.

Commoditization pushes the traditional "value proposition" of an industry to the periphery of the good or service.



The consequences of the commodification of education are more clearly seen if we observe what happened in the content and communication industries. Providers of content (publishers, encyclopedias) gave way to organizations which provided free content but charged or benefitted from peripheral services (Wikipedia, Google, iTunes and YouTube). Commodification of communications spawned the social network industry and web-based communication (Skype, Facebook, and Twitter). In education we're seeing the creation of organizations and businesses designed to deliver free services associated with learning pathways (repositories of learning objects and supplemental instruction). Again, the OER/OCW movements are the result and benefit from the long-term shift in education toward commodification.

### **Cost Containment/Accountability**

The third major trend supporting the OER/OCW movements is the increase in costs of higher education and the accompanying requirements for accountability. Again, the public is demanding to know what the "value add" of a degree is worth in the marketplace and its impact on their personal lives. The rising cost of U.S. higher education means that large numbers of our workforce can't get the education they need, when they need it.

This is a world-wide issue. UNESCO has estimated that by 2025 over 98 million graduates of secondary education will not be able to pursue a college education. To serve these students in traditional ways would require that four large campuses, serving 30,000 students, would have to be built every week for the next 15 years. Something has to give in the worldwide effort to educate people.

The reaction to the increase in the cost of education along with the widely available OER/OCW material has created loosely organized groups that challenge traditional forms of education. The previously mentioned "badges" movement is one such effort supported by the MacArthur Foundation and involving organizations such as NASA, Intel, the Corporation for Public Broadcasting, and the Department of Education and Veteran's Affairs. This and other organizational responses are represented by a collective of people including the Open Study Group, Peer 2 Peer University (P2PU), and the University of the People. The broadest movement is now called the "edupunk" movement. The movement is supported by the Gates Foundation, which funded the publication of *The Edupunks Guide to a DIY Credential*. The "edupunk" movement has questioned the structures and costs of higher education. An edupunk is someone who doesn't want to play by the old college rules. The premise is that anyone can learn from free material on the web, which is "faster, more up to date, and more relevant to our immediate needs" than material found in a typical college classroom.

Openness is now increasingly being adopted as a formal part of the accountability process. Universities are pressured to establish clear learning objectives, assess the learning of graduates, measure their success in achieving those outcomes, and then publish all of these items for public consumption and evaluation. Even more depth of openness is being demanded. For instance, state legislatures, particularly in Texas and Florida, are questioning university “productivity”—by which they primarily mean faculty workload. Illustrating the connection between accountability, openness, and intrusion into what have been the private spaces of higher education, the Texas legislature passed a law (HB2504) requiring public institutions (except medical and dental schools) to post a public website for every undergraduate course.

## **Conclusion**

Advocacy on behalf of the OER/OCW movement is an important role for the OCWC and its members. That advocacy can be most effective when all of us understand the social and economic dynamics that shape our movement. OER/OCW is here to stay in ever greater volume and utility because it is aligned with major social, economic, and educational forces. Universal access, commodification, demands for accountability, and cost effectiveness compose a conceptual model for understanding those forces and how participants in the movement can take advantage of them. It is our imperative now to assume responsibility for the inevitability of the movements as they enter into the bloodstream of institutional life, helping to reconcile traditional values with the very forceful emerging trends.

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# **"Colearning" - Collaborative networks for creating, sharing and reusing OER through social media**

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## **Abstract**

This investigation focuses on the use of social media tools and personal network environments for engaging learning communities in producing, adapting, sharing and disseminating OER collaboratively. The aim of this investigation is to identify new forms of collaboration, as well as strategies that can be used to make the production and adaptation processes of OER more explicit for anyone in the community to contribute.

## **Introduction**

Social media have been changing the ways individuals and collectives communicate with each other, how they acquire and use information as well as how they create and share knowledge. Web 2.0 technologies have created a sense of “always being in touch or reachable”, enabling at the same time the sharing, remixing and reuse of open content online and new ways of “Collaboration 2.0” (Okada et al 2012). Users, both professionals and enterprise as well as learners and educators can now self-manage and self-maintain their own communities, develop, adapt and share their content together and enable formal or informal learning collaboratively.

An impressive growth of social media can be observed in 2011, increasing from 36% of global Internet users to 59% on a monthly and reaching a total of 2.8 billion social media profiles, equivalent to half of all web users worldwide. The number of Facebook users is currently more than 800 million, with more than 200 million registrations per year. YouTube has become the second largest search engine in the world after Google, receiving two billion views a day. Regarding to content published through social media per week, more than 3.5 billion pieces of content are shared in Facebook, more than 1 billion in Twitter, and more than 604,800 hours of video in YouTube (Social Media Today, 2012; Social Marketing Trends, 2012; Digital Buzz, 2012).

Understanding the creation of interactive and collaborative experiences using social media will be essential for producing and disseminating useful Open Educational Resources (OER). The main claim of this study is that social media can be very useful for the OER production due to several key factors, such as global audience dissemination, instantaneous responses and editing, availability for any web user without specialized skills and training, as well as little or no cost (Okada, 2012; Mikroyannidis et al, 2011b Alexander, 2008; Anderson , 2007).

This investigation focuses on the use of social media tools and personal network environments for engaging learning communities in producing, adapting, sharing and disseminating OER collaboratively. The aim of this investigation is to identify new forms of collaboration, as well as strategies that can be used to make the production and adaptation processes of OER more explicit for anyone in the community to contribute.

## **Background**

Several studies discussing social media and OER have been emerging during this last six years and presenting a variety of theoretical discussions and case studies, in which several social media roles for open education can be described. The discussion about social learning space for OER, presented by Buckingham Shum and Ferguson (2012), summarises some of the dimensions that characterize the social learning design space. Reflecting on these dimensions




and the meaning of “open”, social media plays a key role for providing space for collaborative interactions, in which learning support for locating and engaging with OER can be provided by all participants. De Liddo (2012) emphasizes that social media infrastructure based on collective intelligence presents a relevant role for gathering the evidence of OER effectiveness and providing any user (including policy makers) with a community-generated knowledge base to make evidence based decisions. Based on the study presented by Ram et al (2011), social media is also important for providing a new venue for increasing self-motivated and self-guided learning through open social learning communities. Another significant role offered by social media and networking environment highlighted by Conole and Culver (2009) is to provide a dynamic open environment for finding, sharing and discussing learning and teaching ideas and OER designs. Additionally, Franklin and Harmelen (2008) discuss the importance of social open environments allowing greater student independence and autonomy, greater collaboration as well as increased pedagogic efficiency. Focusing on open communities of learning and knowledge building, Hemetsberger and Reinhardt (2006) explains that media richness is decisive to help users to transform tacit knowledge to explicit and comprehensible knowledge for others through the ability to share widely non-verbal cues, personality traits, rapid feedback, as well as natural language. Interpreting key issues of this study, meaningful piece of content shared through social media can enable reflective discourse, re-experience and participatory learning.

The studies related to this investigation focus on a new and relevant key role social media: co-learning through collaborative networks for co-authoring OER - creating, adapting and reusing OER. Several studies highlight some significant barriers in co-authoring OER to be reused (Collis and Strijker, 2003; Harley et al., 2006; Petrides et al., 2008; Okada and Connolly, 2008, Connolly and Scott, 2009). The majority of best practices with Open Educational Resources in Higher Education (HE), in fact, show more evidence about ‘first use’ quality aspects rather than specifically presenting evidence of ‘re-use’. Recent research about recommendations for extending effective reuse (Okada, 2010) remarked upon significant issues to be overcome, particularly the lack of a culture of reuse, which includes social, technical, pedagogical and legal aspects. Diverse examples were highlighted, such as the lack of interest for reusing and developing OER, the need for efficient tools to facilitate and simplify reusability, the low communication among different stakeholders, as well as the importance of social collaboration for discoverability and credibility around the content. Many barriers were indicated, such as understanding and meeting the changing learners’ needs, designing reusable resources by taking into consideration several requirements, implementing appropriate legal aspects and disseminating clear issues with respect to copyright.

Reusability is a key concept selected in this study for educators and learners that create and disseminate OER to be reused widely using social media. When educators and learners are aware of this meaning, they can design OER with reusability in mind. The definition of Reusable Learning Content (RLC) is defined as *“open educational content designed to be reused, therefore, reproducible, addressable and flexible to be adapted multiple times in multiple ways, in multiple purposes, in multiple formats and in multiple contexts by multiple users. RLC can, therefore, refer to “content of learning”, “learning objects”, “teaching materials”, “rich media content”, “interactive components” and “open educational resources”* (Okada, 2010).

Reusability is therefore an essential feature for OER designers having the facility and flexibility for adopting and/or adapting them. In this context these terms can be defined as follows: adopting can mean selecting the material or part of the material as it is. Adopting involves finding, accessing and making a resource available to be used. Adapting includes

small or significant changes in the content. Thus, the process of reusing OER can be described in numerous forms (such as those listed in Table 1), which define, and therefore, clarify the many different ways in which learning content can be reused (Okada, 2010):



Levels of reusability		Ways of reusing OER
	Recreate content & contribute to new productions	<ul style="list-style-type: none"> <li>• <b>Re-authoring:</b> Transforming the content by adding your own interpretation, reflection, practice or knowledge</li> </ul>
		<ul style="list-style-type: none"> <li>• <b>Contextualizing:</b> Changing content or adding new information in order to assign meaning, make sense through examples and scenarios</li> </ul>
		<ul style="list-style-type: none"> <li>• <b>Redesigning:</b> Converting a content from one form to another, presenting pre-existing content into a different delivery format</li> </ul>
	Adapt part of the content	<ul style="list-style-type: none"> <li>• <b>Summarising:</b> Reducing the content by selecting the essential ideas</li> </ul>
		<ul style="list-style-type: none"> <li>• <b>Repurposing:</b> Reusing for a different purpose or alter to make more suited for a different learning goals or outcome</li> </ul>
		<ul style="list-style-type: none"> <li>• <b>Versioning:</b> Implementing specific changes to update the resource or adapt it for different scenario.</li> </ul>
	Adopt same content, but adapt structure, format, interface or language	<ul style="list-style-type: none"> <li>• <b>Translating:</b> Restating Content From One Language Into Another Language</li> </ul>
		<ul style="list-style-type: none"> <li>• <b>Personalising:</b> Aggregating tools to match individual progress and performance</li> </ul>
		<ul style="list-style-type: none"> <li>• <b>Resequencing:</b> Changing the order or sequence</li> </ul>
	Adopt same content (whole, part or combination)	<ul style="list-style-type: none"> <li>• <b>Decomposing:</b> Separating content in different sections, break out content down into parts</li> </ul>
		<ul style="list-style-type: none"> <li>• <b>Remixing:</b> Connecting the content with new media, interactive interfaces or different components</li> </ul>
		<ul style="list-style-type: none"> <li>• <b>Assembling:</b> Integrating the content with other content in order to develop a module or new unit</li> </ul>

Table 1- Levels of Reusability and ways of reusing OER

Some of the current literature summarised in the study of RLC (Okada, 2010) has been highlighting flexible and pragmatic principles for content development for reuse which have been summarised by the following five issues presented in the list below (LittleJohn, 2003):

- **Clear learning outcomes:** reusable resources can be designed in a way that address our own learner's needs, and then generalised to be hypothetical cases of reuse by others.
- **Well-described granular content:** either small chunks or large sections of courses can be pedagogically effective resources for reuse when their content is simple to understand and makes sense.
- **Opportunities for meaningful discourse:** reusable content can be more significant when it is designed to be scalable, sustainable and sociable.
- **Non-authoritative metadata:** reusable resources can be more helpful when they offer the opportunity for (re)users to contribute to the metadata, for instance, by cataloguing the variety of real cases in which context can be wrapped around pre-existing resources, or can be versioned for particular groups of learners.
- **Principles for accessibility:** accessible principles can be very useful for designing resources that can be reused by users with different needs.

These principles were also applied in the study about the OER Flow (Okada & Leslie, 2012), which presents seven steps for designing RLC and various issues to be considered (Figure 2).

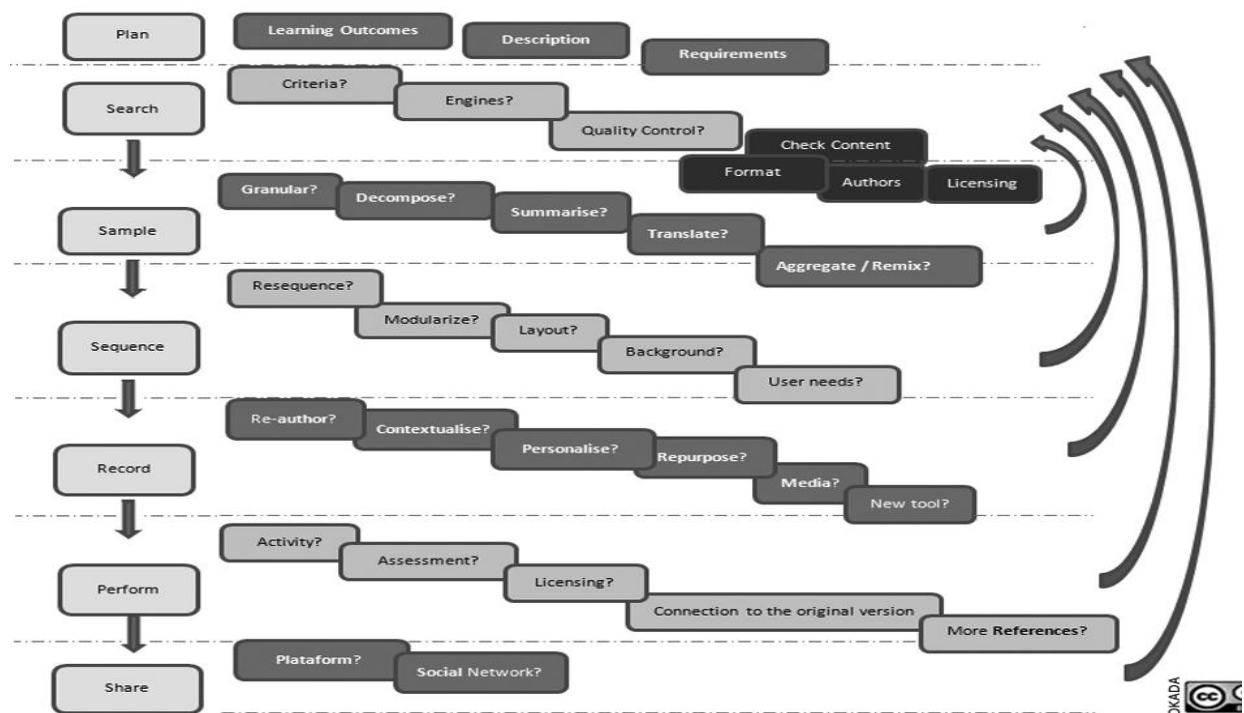


Figure 1 – OER Flow

Grounded on the five principles for OER development for reuse and the OER flow; this study, therefore, investigates strategies that can be used to make the production and adaptation processes of OER more explicit for anyone in the community to contribute. This work also analyses some challenges that co-educators and co-learners may face when producing RLC collaboratively through social media.

## Case Study

The participants were approximately 200 Colearn members interested in co-authoring OER using tools in the OpenScout Tool Library. The majority of them are interested in Educational Technology, participatory media and social learning.

COLEARN - Collaborative Open Learning Community - is a Portuguese language community focused on technologies for collaborative learning, which was founded in 2006 during the OpenLearn Project (The Open University – UK). Currently, there are more than 3.500 members who have been using LabSpace (<http://labspace.open.ac.uk/>), an open virtual learning environment based on Moodle. Since October 2011 two hundred Colearn members started to use the OpenScout Tool library, a Social Network platform based on the Elgg framework (<http://elgg.org/>).

The OpenScout European project stands for “Skill based scouting of open user-generated and community-improved content for management education and training”. As part of this project, the OpenScout tool library (<http://openscout.kmi.open.ac.uk/tool-library/>) has been implemented as a social network of people that (re)use and adapt OER (Mikroyannidis, A. et al, 2010, 2011a). The OpenScout tool library aims at bringing together these people and enables them to share their experiences and best practices in (re)using and adapting learning resources. In addition, it aims at supporting case studies and learning scenarios, provided by different backgrounds and stages of the lifecycle of learning resources, including adaptation, collaboration and communication tools, in a perfect articulation with the OER principles of use, re-use and sharing contents, including multilingual access.

In order to accommodate the sharing of stories and resources, the Elgg social networking platform has been extended with plugins that enable this functionality. In particular, we have implemented a plugin extending the Elgg object class, in order to define a tool object in the tool library and provide a dashboard widget for searching, browsing and adding tools. Similarly, a second plugin has been implemented for contributing a story to the tool library. If the story is about using a particular set of tools, then the user can associate the story with tool objects in the tool library.

There is the opportunity for users to tag, comment, rate and recommend stories and resources throughout the tool library. Using these social metadata provides a rich method for filtering and identifying the most useful (e.g. highly recommended by peers) stories and resources for a user in a particular situation. For example, based on the format or license of a particular content a user has found, a suite of useful tools can be suggested. Users can also search for tools using the name, terms in the description, license or format.

Differently from the VLE LabSpace, Colearn members can apply the Tool-Library Social Network platform, which provides networking functionalities, to manage their social contacts based on their interests and institutional research groups as well as expand their learning and social ties, in a public or private way.

The Colearn participants who started to use Tool-Library are organised by 30 different academics groups of research in Education from Brazil, Spain, Portugal and England, who are classified in five teams: Doctors (45%), PhD students (10%), Master students (30%), Bachelors (11%) and Undergraduates (04%).

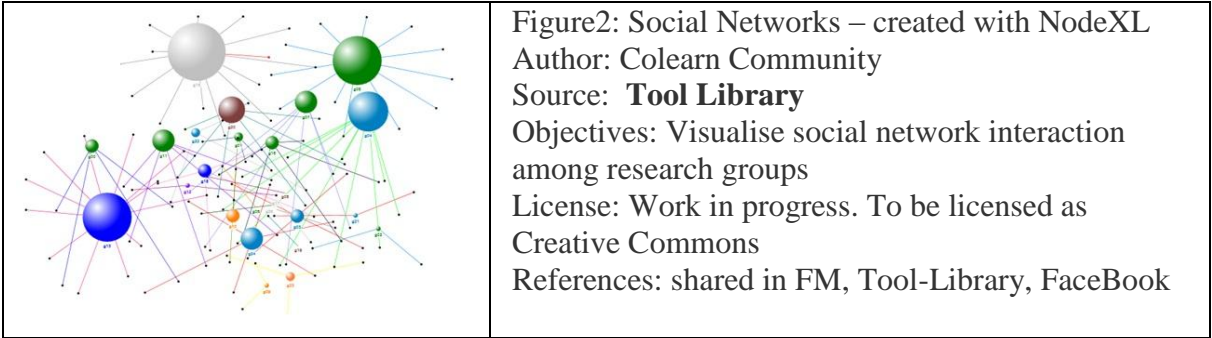
This study is applying two research methods of investigation: participatory observation and Research 2.0. The first method provides us with empirical observation for collecting and sharing data about group and user’s behaviors within the OpenScout Tool Library.

Research 2.0 is used to collect and analyze data generated from analytics services such as Google analytics from the OpenScout Tool Library, as well as YouTube analytics and data collected from the initial online survey. In order to promote interaction and collaboration within participants, three important procedures were established by the Colearn Community in the Tool Library:

1. First procedure is a survey for all participants to describe both personal and research group interests as well as academic background, technology skills including experience with social networks.
2. Based on their interests, second procedure refers to production of an open educational media (an image, an audio-visual and a social network map) about the openness philosophy in Education connected to individuals and groups’ research themes. This also includes a collaborative reconstruction of the open video clip “Shared Culture” created originally by Creative Commons.
3. The third procedure focuses on developing an OER unit in groups that integrates the open educational media components created by participants, such as open educational image, open educational video and open educational map as well as disseminating the OER production and OER tools through their social media environments.

These three procedures helped Colearners to produce six kinds of content collaboratively: open educational information, open educational images, open educational videos, open educational maps, open educational units and open educational collection.

### 1. Open educational information



Open educational information generated by the Colearn Community has been shared in different social media environments: discussion forums in the Tool Library, individual and group interactions in Facebook, as well as microblogging in Twitter. This information concerns events, news, references and production of OER. Figure 3 shows a social network analysis of Colearn research groups with more than 200 people from different locations of Brasil, Portugal UK Spain and France. This image was developed in NodeXL by users of Colearn and was shared and discussed via the FlashMeeting video conference facility (<http://flashmeeting.open.ac.uk/>) and Facebook. This is part of a collaborative study about Participatory Social Network Analysis by OER communities (Okada, Meister and Mikroyannidis, 2012). The aim of this study is to examine different perspectives of a social network analysis developed by its own users. This case study focuses on the Colearn open social network in Higher Education interested in OER, as well as the application NodeXL, which is an open tool for social network analysis. The key claim of this study is that the ability

to collect and analyse the actions of educational social network by its own participants offers useful perspectives on collaborative OER production and learning.

## 2. Open educational images

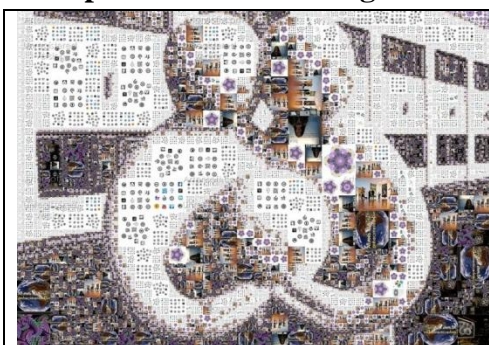


Figure3: “Learning Together” through social networks – created with ArtenSoft Collage Maker  
Author: Beto Steimber

Source: **WikiMedia Commons** & Tool-Library  
<http://openscout.kmi.open.ac.uk/tool-library/pg/pages/view/6935/>

Objectives: Reflect on social networks, recreation, reuse, remix of OER (productions and processes)

License: work in progress under Creative Commons license

References: Images & Photos by Colearn shared in Wikimedia Commons, Picasa, Flickr, Tool-Library, FaceBook

Open educational images created by the Colearn Community have been shared in different repositories, such as Wikimedia Commons, Flickr and Picasa as well as social networks FaceBook and Orkut. All these images were created by using an open shared template defined by the community to facilitate location and reuse, including better understanding of learning context and objectives.

Colearners have been creating these images using a set of diverse tools shared in the OpenScout Tool Library. The community has been collaborating not only by creating open educational images but also adding more information in the OpenScout Tool Library about image editors (e.g. Powerpoint, Picasa, Gimpshop, Myoats, Kaleido, Sumo Paint, Free Online and Photo Editor) and sharing in FaceBook. One of the key aims of the community is to understand how to create meaningful images with clear educational purpose explicit and how the image can help colearners construct new meanings as well as new visual interpretations by reusing the same image and different tools.

## 3. Open educational videos



Figure4: Web 2.0 OER and COLEARN community - created with iMovie

Author: Ale Okada and Izabel Meister

Source: **Youtube** & Tool-Library

<http://www.youtube.com/watch?v=pKnyuuR7pfQ&feature=related>

Objectives: Acquire a deep understanding of the OpenScout Tool Library social network and identify ways of contributing to OER book production

License: Creative Commons

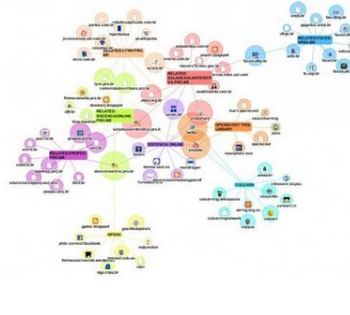
References: shared in Youtube, Facebook, G+. Twitter, Tool-library

Open educational videos produced by the Colearn Community have been also published in different repositories such as YouTube, Vimeo and TeacherTube. These movie clips were also created through an open shared template. The intention of this template is to help users identify learning objectives and content. Diverse tools for editing and adapting movieclips were shared in the OpenScout Tool Library and its URLs were disseminated then in Facebook by




participants. These tools include Picasa, Youtube, Video Editor, Windows Movie Maker/Windows Live Movie Maker, and Camtasia. Another aims of Colearn are to investigate useful strategies to facilitate adaptation of digital films as well as analyse how social media networks can contribute to disseminate and recreate new versions

#### 4. Open educational maps

	<p>Figure5: Collaborative Learning network map - created with Touchgraph            Author: Rosemary dos Santos            Source: <b>Tool Library</b> <a href="http://openscout.kmi.open.ac.uk/tool-library/pg/pages/view/6935/">http://openscout.kmi.open.ac.uk/tool-library/pg/pages/view/6935/</a>            Objectives: Analyse how graphical visualizations can contribute to understand collaborative learning networks            License: Creative Commons Attribution licence            References: shared in Tool-Library</p>
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Open educational maps elaborated by the Colearn Community have been shared in Facebook and also in the same repositories of images. Several tools were used to create these maps (e.g. Compendium, Freemind, Mindmeister, Mind42 and Touchgraph). Some versions of these maps are available as in public maps repositories, such as the Openlearn LabSpace (<http://labspace.open.ac.uk/>) for Compendium Maps, as well as the CMap server ([cmap.ihmc.uk](http://cmap.ihmc.uk)) for maps created in Cmap Tools. The community is also interested in analysing how different visualizations through maps can be useful not only as educational content for learning but also as an useful method for OER research.

#### 5. Open educational units

	<p>Figure6: Web 2.0 and Open Educational Recourses (OER) into learning and professional development - create in Word &amp; Adobe            Author: Colearn community            Source: <b>Colearn Facebook, OER Blog, LabSpace, Tool Library</b> <a href="http://openscout.kmi.open.ac.uk/tool-library/pg/pages/view/4906/">http://openscout.kmi.open.ac.uk/tool-library/pg/pages/view/4906/</a>            Objectives: Be aware about openness philosophy and discuss the meaning of OER and social media for widening learning participation.            License: Creative Commons            References: shared in Facebook, G+. Twitter, Tool-library</p>
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Each research group of Colearn developed an open educational unit, which integrates open educational media components described above. These units have been shared in different repositories such as Openlearn LabSpace, OER Blog and OpenScout Tool-Library. The next step for the community is to examine what are the key issues for designing the unit by integrating all these educational social media components.

## 6. Open educational collection

	<p>Figure7: Web 2.0 and Open Educational Recourses (OER) into learning and professional development</p> <p>Author: Colearn community</p> <p>Source: <b>OER BLOG, Colearn Facebook and twitter</b>, <a href="http://oer.kmi.open.ac.uk/?page_id=138">http://oer.kmi.open.ac.uk/?page_id=138</a></p> <p>Objectives: Reflect and discuss how web 2.0 and OER social networks can be used for learning and professional development</p> <p>License: Creative Commons</p> <p>References: shared in Facebook, Likendin, G+. Twitter, Tool-library</p>
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Open educational collection created by the Colearn Community is an example that aggregates all open educational units in order to share the work of all Colearn research groups. This collection constitutes a OER book, which is available in different formats such as WIKI, PDF, HTML, and EPUB for facilitating peer reviews, feedback, reusability and recreation of new work. Future research for the Colearn community is to investigate the key issues for disseminating and adapting a collection collaboratively, as well as strategies for obtaining feedback.

### Brief Summary

The rapid increase of social media suggests the importance of investigating strategies for developing social networks around OER, not only for social learning, but also for collective production. All these important roles that social media play are very significant for improving quality and reusability of OER such as: fast feedback, self-motivation, self-guidance, sensemaking, community-generated knowledge and collective intelligence.

There are, however, many important issues to be considered for producing OER using social media such as:

- Communities of practices who share clear and useful ways for co-authoring OER.
- Educators professional development for OER creation & reuse.
- Peer review process to assure quality of OER.
- Participation of learners in selection, reuse and adaptation of OER.

Some barriers observed in this study described by participants which were discussed in the Tool-Library, Facebook and Twitter:

- Lack of time for managing various social networks environments as well as exploring and getting accustomed to the Tool Library.
- Difficulties in the use of collaborative technologies, including finding and selecting relevant OER tools.
- Lack of information about open license, REA and ways to convince the participants' institutions to participate in the OER movement.
- Low experience in creating and sharing OER reuse and low understanding of the benefits of REA and potential impact.

### Conclusion

This research has presented meaningful ways of collaborating using social media for coauthoring OER. Social media play several key roles for improving quality, reusability and dissemination of OER. This study summarized some benefits and challenges that co-educators



and co-learners face when producing RLC collaboratively through social media. Future research will report progress on important issues mentioned in this study regarding social network analysis, reusability tracking, new strategies and methods to facilitate OER coauthoring and collaborative learning.

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# **Conditions Required to Implement Open Educational Resource (OER) Practices in Latin American Higher Education**

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## **Abstract**

The creation of OpenCourseWare (OCW) by the MIT in 2001 can be considered as a milestone in the recent history of open educational resources (OER). Since then universities from around the world have adopted a set of associated open educational initiatives. After highlighting best practices in English speaking universities, this paper explores the current state of the OER movement in Latin American higher education (HE) institutions. Relevant open access initiatives are analyzed here in order to identify the strengths and opportunities of OER in Latin America. Finally, an OER action research project, OportUnidad, is presented. This study, lead by a partnership of European and Latin American universities, aims to increase the awareness and institutional support of OER in Latin American HE. The paper concludes by highlighting some of the challenges and conditions required to foster the adoption of OER in the region.

**Keywords:** open educational resources, open educational practices, radical innovation, incremental innovation, openness, digital technologies, higher education.

## **1. Introduction**

In this article we consider some aspects that relate to universities of the early 21<sup>st</sup> century. In particular, we will examine to what extent the rapid proliferation of digital technologies has accentuated a whole set of transformations regarding the role of universities as a main source of knowledge within today's knowledge-based society. The main focus will be on new and more open forms of accessing, producing and distributing knowledge in (and within) Higher Education (HE) institutions. After presenting some relevant examples of universities in the US and Europe, the case of Latin American universities will be presented.

For the purpose of this analysis, the adoption of strategies and channels that embrace the principles of openness and reusability will be considered as relevant drivers for innovation within the context of educational institutions. This is because resource openness can bring about new possibilities of learning, as well as the creation of new knowledge grounded in different contexts, disciplines and communities. Based on Rogers' work on diffusion of innovation (Rogers, 2003), these open educational resource (OER) practices can be considered to benefit the 'innovators' and 'early adopters' in education organizations because they enrich the possibilities of interaction and exchange. In addition, previous work in the field of 'open innovation' (Chesbrough, 2006) has demonstrated the positive impacts of bottom-up, distributed and collaborative practices of knowledge transfers between specific countries. Openness and the distributed exchange of knowledge are considered here as an opportunity to achieve new levels of innovation within and outside the HE environment (UNESCO and COL, 2011).

## **2. Academic Openness: Open Educational Resources and OpenCourseWare**

On the 5<sup>th</sup> of April 2001, newspapers around the world announced a new MIT initiative called OpenCourseWare (OCW).<sup>10</sup> This breakthrough project by MIT was conceived as the free and open digital publication of high quality educational materials, organized as courses. Charles

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<sup>10</sup> See for example, Associated Press. (April, 5<sup>th</sup>, 2001). MIT plans to offer course materials free on Internet.

Vest, then MIT President, stated that “We see it as a source material that will support education worldwide, including innovation in the process of teaching and learning itself”. He added:

“We’ve learned this lesson over and over again. You can’t have tight, closed-up systems. We’ve tried to open up software infrastructure in a variety of ways and that’s what unleashed the creativity of software developers; I think the same thing can happen in education.” (Goldberg 2001)

Perhaps in 2001 it was difficult to envision the impact that the initiative would have on the world of HE over the coming decade. The announcement on the front page of the New York Times noted that major universities such as Stanford and the University of California at Los Angeles (UCLA) were being more restrained: “everybody else besides MIT is in the position of being more cautious and watching to see what Internet strategy works best” (Goldberg 2001). In addition, the UK’s Guardian newspaper remarked that only “two virtual universities in the world - Athabasca in Canada and another in Finland” had adopted such a radical strategy of openness. Professor Steven Lerman, Chairman of the MIT faculty, noted that this project had “stemmed from concern over the growing privatisation of knowledge” (Wild 2001).

Carson (2009) has stated that the resulting quick growth of OCW sharing was inconceivable at the time the concept was first proposed in 2001. However, ever since its introduction it was clear that OCW, with its non-profit approach and focus on addressing the much wider global need for access to educational content, would benefit from cooperation between universities. OCW has indeed encouraged a new model of interaction between institutions online; a short time after OCW’s launch, major partners embraced the idea with a rather more global view. Two key translations were made, into Portuguese and Spanish by Universia (<http://ocw.universia.net>), and then into Chinese by China Open Resources for Education (<http://www.core.org.cn>). Japan also joined the initiative in the early years of the OCW movement ([www.jocw.jp](http://www.jocw.jp)).

The OCW initiative grew much more quickly than anyone had anticipated. Carson (2009) notes that MIT found it difficult to sustainably coordinate the communication required between all the emerging OCW programmes, and in 2005 discussed the creation of the OCW Consortium (OCW-C; <http://www.ocwconsortium.org>). The consortium was created to increase global awareness of existing content, and to help the constituent projects to develop more sustainable approaches to OCW publication. Some remarkable and well known OCW initiatives include those at Utah State University (<http://ocw.usu.edu/>), the Johns Hopkins Bloomberg School of Public Health (<http://ocw.jhsph.edu>), United Nations University (<http://ocw.unu.edu>), the University of Notre Dame (<http://ocw.nd.edu>), Tufts University (<http://ocw.tufts.edu>), Carnegie Mellon University (<https://oli.web.cmu.edu>), Rice University (<http://cnx.org/content>), the University of Michigan (<https://open.umich.edu>), the University of California, Irvine (<http://ocw.uci.edu/>), and the Technical University of Madrid (<http://ocw.upm.es>), among many others.

Despite the fact that MIT was not the first HE institution to provide open access to its educational resources, its prestige and visibility was significantly influential for the enlargement and consolidation of the OCW movement. Indeed, Hodgkinson-Williams, Willmers, and Gray (2009) argue that interest in open educational resources dates from MIT’s embarking on the process of opening up its course materials for use by anyone, thereby “radically changing its traditional model of teaching and learning. While not the first university to begin sharing its ‘intellectual capital’ free of charge, it was the scale of MIT’s initiative that

caught the world's attention and gave substance to the concept of 'open content', now termed OER."

The development of open initiatives was not limited to the OCW-C, and several parallel inter-university agreements have taken place over the last decade, with different open movements bringing more relevance and visibility to open practices of education. For example, the Budapest Open Access Initiative (2000) highlighted the importance of making research articles in all academic fields freely available on the Internet (<http://www.soros.org/openaccess>). In 2003, the Berlin Open Access to Scientific Knowledge declaration (<http://oa.mpg.de>) stressed the importance of open access to global scientific knowledge. The Cape Town Open Education Declaration (2007) proposed an acceleration of the promotion of open resources, technology and teaching practices in education (<http://www.capetowndeclaration.org>).

Three comprehensive definitions of OER, coined by the OECD, the William and Flora Hewlett Foundation/UNESCO, and the Cape Town Declaration, are noted below:

"[OER are] digitised materials offered freely and openly for educators, students, and self-learners to use and reuse for teaching, learning, and research. OER includes learning content, software tools to develop, use, and distribute content, and implementation resources such as open licences." (OECD and Centre for Educational Research and Innovation 2007, 10)

"OER are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge." The William and Flora Hewlett Foundation in (Atkins et al. 2007, 4). Note this definition has also been adopted by (UNESCO and COL 2011).

"OER are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge." (Cape Town Open Education Declaration, 2007).

All these definitions highlight three key components, namely, Open Intellectual Property Licences (public domain); permission to use, adapt and replicate contents freely; and non-discriminatory privilege (i.e. rights are provided to everyone).

Nevertheless, it is important not to overestimate the level, or simplify our understanding, of OER adoption. Despite the growing number of OER initiatives in HE, OER can't yet be considered as a mainstream practice among universities. Seven years after the creation of the OCW-C only 202 member universities have registered (excluding the associate consortia), and the Ibero-American OCW Universia (<http://mit.ocw.universia.net>) includes 95 universities. These universities are only the tip of the iceberg in comparison with the thousands of universities that still haven't adopted the OER practices.

### 3. OER in Latin America: Strengths and Opportunities

Latin America is the region of Central and South America where Spanish and Portuguese are the main languages spoken. More than 590 million people are estimated to live in the more than 20 countries that make up Latin America. Over 2,500 universities are found in the region, together with more than 7,000 other (non-university) higher education institutions (Brunner 2007), with more than 15 million students enrolled (Cruz González, García Cuevas, and González Suárez 2010). OER initiatives in the region are diverse, and not necessarily connected. In some Latin American nations (such as Mexico and Brazil) the HE sector has a proactive role in the adoption of OER projects, while many other countries have very little or no digital presence in this field. Despite the existence of notable OER initiatives, this region has not yet effectively exploited the comparative advantage of having only two main languages (Spanish and Portuguese) in a population of almost 600 million.

In the preparation of this paper, major search engines were used to explore the presence of documentation about OER in Latin America. After searching in the *Web of Knowledge* among the first 100 results of “open educational resources” (published between 2009-2012) only three papers were found to provide information about OER in the region - the three publications referring either to Brazil or Ecuador. No comprehensive regional documentation about Latin America was identified. Similar searches were performed in *Google Books*, using the keywords “recursos educativos abiertos” (OER in Spanish) and “Latin-America”, within the same time period. Only five results were returned, none of them offering comprehensive information about the region. Finally, after searching *Google Scholar* with the same keywords and time period, only 22 publications were identified. Again, none of them offered any regional analysis about OER.

Some early conclusions can be reached as a result of this exploration: in Latin America there is a clear need for, and opportunity to develop, further OER initiatives, as well as further research and publications in this field. According to The Higher Education Academy and JISC (2011) some benefits associated with the adoption of OER are:

- Freedom of access also enhances flexibility of resources.
- Boosting opportunities for learning, applying knowledge in a wider context.
- Supporting learner-centred, self-directed, peer-to-peer and social/informal learning approaches, acting as a catalyst for less formal collaborations and
- partnerships.
- Materials for review purposes (student/user provide feedback and open peer review).
- Contributes to reputational benefits, providing important exposure for faculty (and the institution).
- Enhances or diversifies the curriculum.
- Increase the sharing of ideas (offering new opportunities for people and communities around the world).
- Supports widening participation: open textbooks reduce the cost of study for learners.

The absence of published research about OER in Latin America cannot be understood to indicate a complete lack of open access practices in that region. Masterman et al. (2011) have explained that the iceberg metaphor can be used to explain the OER phenomenon: “Above the surface is a small amount of highly visible licensed OER that officially bears the name of the institution and below the surface, often invisible beyond a specific course, is a much greater volume of reuse of other ‘non-OER’ digital resources by staff and students”. In other words, despite an apparent lack of numerous initiatives promoting the use and adoption of OER from

Latin American HE institutions, there are likely to be innumerable individual (community based) practices, which use and reuse these kinds of resources.

A few remarkable examples exist which might represent the “tip of an iceberg” of OER practices in the region. These cases, regarded as “early adopter” organizations (Rogers, 2003), are legitimate stakeholders who can easily expand their vision and expertise among peer institutions in the region. Four key examples of this are highlighted below. The first and second cases are initiatives that facilitate the creation of repositories for educational resources. The third and fourth examples are platforms focused on the dissemination of academic and scientific outputs.

**a. Universia** (<http://ocw.universia.net>) is a network with members from 11 countries from Latin America, Spain and Portugal. Universia aims to create a common forum for higher education through training, culture, research, and collaboration with the business world. Universia includes more than 1000 universities and HE institutions, representing approximately 10 million students (Niitamo et al., 2006). In its early days, Universia aimed to increase the reach, accessibility and impact of MIT OCW, by providing materials translated into Spanish and Portuguese to millions of users in Latin America. Universia has now shifted its focus away from translation to helping member universities in Latin America to create their own repositories. Almost 70 Latin American universities from 10 countries are now registered in OCW Universia, all of which offer open course materials online (Klemke et al. 2010; Banco Santander, 2012).

**b. Temoa** (<http://www.temoa.info/>) is a public catalogue that indexes OER from top universities worldwide. Its aim is to offer a public and multilingual catalogue built and reviewed by experts, and to simplify the finding of OER by providing specialized and collaborative search tools. It contains selected educational resources, described and evaluated by an academic community, and categorized by area of knowledge, educational level and language, among other criteria. Temoa has evolved towards a Mobile Resources Repository (<http://itunes.apple.com/mx/app/temoa-recent-oer/id453015756?mt=8>) that facilitates access to OER anywhere and anytime. By February 2012, Temoa had registered more than 30,000 educational resources, as well as more than 4,000 educational resources already used in classes. The initiative was developed by the Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico (Mortera-Gutierrez, 2010).

**c. SciELO** (<http://www.scielo.org/>) is a Latin American and Caribbean Scientific Electronic Library that provides global visibility to the academic publishing of scientific journals. SciELO was created in 2007 to store, disseminate and evaluate scientific literature in electronic format. It comprises a network of 15 national and two thematic open access journal collections that are regularly published online. It also includes more than 600 journal titles, about 200,000 articles, and 4 million granted citation. More than 12 million articles were accessed per month in 2009. Today, it can be regarded as one of the top-accessed research-based online collections in Ibero-America (Spain, Portugal and Latin American countries). It was originally created by two Brazilian research organizations.

**d. REDALYC** (<http://redalyc.uaemex.mx>) is a Latin American and Caribbean network of open access scientific journals, started in Mexico in 2003. It was created to build a scientific information system to leverage access to and visibility of the scientific knowledge produced in, and about, Latin America. Nowadays, Redalyc is an information system that also evaluates the scientific and editorial quality of scientific knowledge production in Ibero-America. Redalyc has been consolidated as a significant repository of knowledge, with more than 750 journals

online and over 200,000 full-text articles. Today the complete collection of open access journals is also available on the Redalyc Mobile App. It was created by the Universidad Autónoma del Estado de México (Packer 2010).

An analysis developed by Farias Navarro et al. (2010) of these Latin American universities that have already adopted OCW Universia, identified 196 open courses offered on the platform, with an average of 13 open courses offered per University. Their research also emphasized the high concentration of free courses in a small number of institutions, with only four universities generating 48 percent of the courses offered (Universidad Nacional de Córdoba, Universidad de Chile, Universidad de Monterrey and Universidad Eafit). This regional analysis also finds that these OCW resources are used primarily (91.67%) to increase the knowledge of a specific course, and exceptionally (8.33%) as supplementary material due to an absence of lecturers.

Based on the above information, and considering the magnitude of the region in terms of size, number of HE institutions, but also taking into account that only two languages are shared by 590 million inhabitants, the development of OER initiatives in Latin America suggests promising opportunities. A contribution to facilitate the growth of OER awareness within and between Latin American HE institutions can undoubtedly leverage new opportunities. Based on that expectation, a network of Latin American and European universities has launched a new project called OportUnidad.

### **3. OportUnidad: Fostering Open Educational Practices Through a Bottom-up Approach**

The OportUnidad project (<http://oportunidadproject.eu>), funded by the European Commission's ALFA programme, will develop, between 2012-2014, a higher education inter-institutional action research programme in Latin America to promote the use, re-utilisation, production and sharing of OER. OportUnidad aims to provide a comprehensive set of guidelines on pedagogical approaches, technological solutions and organisational frameworks, as well as an institutional business model to develop OER initiatives. OportUnidad will support universities, teachers and students to collaborate, compile and share course material and resources. Rather than pushing for a technological transformation, OportUnidad envisions a need for new attitudes towards knowledge sharing as well as the development of new literacies. From an operational point of view, the specific objectives of the OportUnidad project are:

- to raise awareness and widen Latin American HEI participation in open educational practices and resources;
- to define an agenda for re-use of OER at HE institutional level;
- to define a mid-term strategic roadmap for the implementation of the OER Agenda at a local-institutional level according to local, cultural and institutional needs and strategies;
- to train faculty in how to use and reuse OER in a pedagogically rich context;
- to promote faculty peer-to-peer learning to ensure the local sustainability of the initiative; and
- to pilot start-up open educational practices that provide up to date open content and flexible learning paths to learners.

To reach these specific objectives, the project will provide the following outputs:

- A compendium of OER practices based on European and Latin American experiences;
- an agenda of OER re-use for university course development;



- a roadmap(s) of OER practices, as an adoption of the Agenda to the local, cultural and institutional framework;
- 80 hours of online training courses in “Open Educational Practices and Resources” for university teachers;
- 40 hours of assisted start-up of OER practices in university courses as part of the roadmap implementation; and
- a report on the pilot lessons learned as a result of the online training course, including tips for an efficient re-design of the Agenda, roadmap(s), and online course.

More than 50 Latin American HE institutions and organisations will benefit from this initiative. These organisations, regarded as OportUnidad fellows, will be provided with free training and will be assisted in the process of developing institutional open educational roadmaps based on the OportUnidad Agenda, but tailored to meet the individual needs of each organisation, taking into account their local, cultural and institutional contexts. The OportUnidad project also aims to enhance and foster those “below the surface” individual OER initiatives that also play an active role in terms of knowledge exchange.

OportUnidad is led by the following Latin American universities: the Universidade Federal Fluminense (Brazil), the Universidad Estatal a Distancia (Costa Rica), the Universidad Técnica Particular de Loja (Ecuador), the Fundación Uvirtual (Bolivia), the Universidad Virtual del Tecnológico de Monterrey (Mexico), the Universidad de la Empresa (Uruguay) and the Universidad Inca Garcilaso de la Vega (Peru). There are also four partner institutions from the EU: the Università degli Studi Guglielmo Marconi (Italy), the Universitat Oberta de Catalunya (Spain), the Faculdade de Letras da Universidade de Lisboa (Portugal), and the University of Oxford (UK).

#### **4. Discussion**

The last two decades have seen a substantial transformation of the new practices adopted by universities. One of the most remarkable changes can be seen in the new means and channels available to exchange knowledge. An increasing interest in sharing and opening access to academic/educational resources has also been supported by a variety of initiatives, many of which consider openness and free access as a fundamental form of knowledge exchange.

Recent OER initiatives, as the ones previously described, can be seen as an example of the current interest in exploring new approaches and mechanisms to understand learning practices beyond the traditional context of HE institutions, but also as a call to create new forms of organizing and validating knowledge. Some of the OER initiatives described in this paper suggest the need for a new understanding of access to content, where openness of academic and educational resources fosters visibility on the Internet, and provides new forms of institutional recognition and authority.

The MIT OCW and lately the OCW-C have played the roles of HE “innovator” and “early adopter”, respectively. Since then, major OER initiatives have followed their lead. The last decade has seen a spreading of the word about openness and its associated benefits. Nevertheless, the “learning curve” and the rate of OER adoption has been uneven across different regions. The adoption of OER principles operates according to a multiplicity of contextual factors that vary depending on each HE institution. Hattaka (2009) has identified a number of barriers that affect a broader adoption of open content, which can be summarized as: educational rules and restrictions, language, relevance, access, technical resources, quality, intellectual property, awareness, computer literacy, teaching capacity, and traditions.

These OER initiatives are promising in terms of possibilities of innovation in the HE sector, but their adoption is still undergoing a process of consolidation that will require further research as well as strengthening of inter-institutional and regional coordination. The consequences of fostering OER are not limited only to releasing resources online, but also to addressing “walled garden” phenomenon in order to stimulate the creation of new modes of exchange and distribution of information with different stakeholders beyond HE: “Although the OER phenomenon is very recent, it is the subject of growing interest. No definite statistics are available, but it has expanded in terms of number of projects, number of people involved and number of resources available. It is a global development, although most resources are currently produced in developed countries” (OECD, 2007).

Certainly the situation in Latin America seems to support the OECD’s views, regarding where content is produced. However, instead of considering the lack of OER adoption in the region as a handicap, it can instead be seen as an opportunity to learn from other experiences and regions. OportUnidad, the action-research initiative described in this paper, aims to raise awareness about the benefits of OER, as well as promoting strategic institutional support from HE organizations across the region. As Masterman et al. (2011) have discussed, the challenge has to go beyond the identification of the (few) major and highly institutionalized programmes, in order to also recognize, articulate and promote bottom-up (community based) OER initiatives. The current transition observed within HE institutions is still in progress, and it still seems too early to predict the middle- and long-term implications of the openness movement in the HE sector. More studies in this field will be required in order to provide a clearer picture of the long-term implication of these changes.

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## Connecting the Dots

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### Abstract

When the Saylor Foundation surveyed the open education space four years ago, it identified four problems:

1. Excellent content is disaggregated and often hard to find.
2. Many content providers “recreate the wheel,” duplicating the efforts of others while leaving entire subjects largely devoid of useful content.
3. The quality of content is difficult to assess due to a lack of validation metrics.
4. Even where excellent, discoverable content exists, there are no end-to-end solutions that organize and contextualize the content a student needs to master within a given subject, course, or discipline.

The Foundation sought to address all four issues by developing a structured content curation process, by which professors seek, vet, frame, and add to existing resources in order to yield complete courses, hosted on a central site, and tied to learning outcomes, assessments, and pre-defined learning taxonomies.

An ideal paper for educators, open content creators, and OER proponents looking for best practices in the compilation of open content, *Connecting the Dots* will focus on the Saylor Foundation’s content aggregation process, which encourages the sharing and reuse of open content. The Saylor Foundation works with over 170 professors to aggregate content into college-level courses. To find accurate, accessible resources, it acquaints its professors with known open content repositories and textbook sites, and encourages discipline teams to share discipline-specific resources. By beginning its process with learning taxonomies and outcomes in place, the Saylor Foundation team is able to focus content searches, identifying only those resources needed for content mastery. A strategic decision was also made to include copyrighted materials in the content aggregation process: while the Foundation is able to host some content on its website, Saylor.org, it continues to link to copyright-protected materials with a goal of either obtaining permission to host the resource permanently or replace it with a more effective, openly licensed version.

The Saylor Foundation’s structured aggregation technique addresses all four of the initially stated problems while offering salient benefits to stakeholders in the OER space.

- First, it addresses the needs of students and educators searching for content by contextualizing and vetting content. Students visiting Saylor.org will know that a professor has canvassed the web on his or her behalf and will also understand how content fits within a chosen course and its projected outcomes.
- Second, the process helps the team identify gaps in existing content and to avoid unnecessary duplication, thus assisting content developers and funders in the sensible use of time and resources when developing new OER content.
- Finally, it draws attention to the work of content providers who have previously remained relatively undiscovered.

Presentation attendees will come away having learned about the Saylor Foundation and how its content aggregation procedure encourages the sharing, reuse, and, in some cases, creation of open content.

### **Keywords**

Content in Context

Peer Reviewed Courses

Higher Education

### **Connecting the Dots**

Most individuals in the Open Education community agree that education is advancing and moving towards a more distributed model, which includes online learning environments, distance learning programs, and hybrid education models. All of these experiments are supplemented by studies on asynchronous learning and student-oriented teaching as well as the problems inherent in one-sized-fits-all schooling approaches. Open Educational Resources (OER), a vast, distributed galaxy of content, is both a mechanism and manifestation of this shift, with goals ranging from reshaping educational institutions to creating, as eloquently coined in the Cape Town Open Education Declaration, “a world where each and every person on Earth can access and contribute to the sum of all human knowledge.”

However, as many educational practitioners, such as Dave Cormier, have pointed out, the educational landscape is caught somewhere between distribution and convergence. Somewhere along this continuum of tension, it is important to find models that embrace and, to some degree, balance these two opposite forces. Models are needed to both wander the galaxy of educational resources while also identifying and even designing constellations, pathways, and patterns.

Saylor.org is one approach to that dynamic and is one way of presenting students with a way of navigating the OER network. The Saylor Foundation’s model remains both open and structured at the same time. This paper addresses this very approach to “connecting the dots” of open content.

### **Our Problem Statement**

Saylor.org was born of Michael Saylor’s vision of extending his college experience, a world-class education largely gained from the back of a 500 person lecture hall, for free to anyone currently facing barriers to receiving an education. When the Saylor Foundation first entered the OER space with its trustee’s guiding vision, staff members surveyed the scene to determine how to best add to the Open Education community’s work without replicating efforts. Their findings indicated that a great amount of progress had been made in the short existence of OER: they were astounded by the number of universities and organizations creating and making content freely available utilizing the Internet and Creative Commons licenses.

In order to direct and focus the Foundation’s efforts, a problem statement was first defined. While the OER ecosystem is expansive and thriving, staff members found that:

- Content is often disaggregated, hidden, or buried, and new content is continually added to the space. A student looking for resources or even full courses in a certain subject area would have to spend immense amounts of time simply searching through all of the freely available content. New resources and projects are also added to this space on a weekly basis.

- Content tends to be redundant. Many educational providers recreate the wheel, whether informed by the “not made here” frame of mind or by the general difficulty of finding material and making it operable. This means that entire fields and subjects are left devoid of useful content.
- Content is difficult to assess in terms of quality. There are no validating metrics or tools at the public’s disposal.
- Content is decontextualized: there are no end-to-end solutions that tell students, from A-Z, what they should focus on learning in order to learn the equivalent of what is taught in a brick-and-mortar institution. There are no standards for those who seek a more structured learning experience.

In short, after observing the space, the Saylor Foundation wondered: how can self-directed learners with specific educational goals navigate this network themselves? How can they determine what to use and when, if they wish to pursue a field of study or even a specific subject in a focused, directed way?

### **Our Solution**

The Saylor Foundation’s solution was to tap into the academic community, to engage and empower forward-thinking educational practitioners to share a sequestered knowledge base. Educators were asked to use their expert knowledge of the higher education system, their disciplines, their courses, their learning experiences, and their pedagogical training to help the Foundation shape course curricula out of existing OER, to add to and scaffold that body of content, and to then participate in peer review panels in order to ensure the quality of all of its content and the design decisions that went into constructing its courses.

In practical terms, this means that one of the Foundation’s 170 consulting professors builds a self-paced, college-level course designed to sustain a semester-long period of engagement out of existing, freely available educational resources. To illustrate the Saylor.org course creation process, consider the experience of one of the Foundation’s consulting professors, Benjamin Schwantes. In one case, Benjamin was assigned HIST212: Introduction to United States History: Reconstruction to the Present. Benjamin has extensive experience teaching this course in traditional universities. To begin, he first designed a course “blueprint” that outlines the basic learning taxonomies that a student in a traditional higher education institution would encounter in a comparable course and then tie those taxonomies to learning outcomes.

With this basic framework in place, the Saylor Foundation trained Benjamin to find OER. He was provided with online training and tools, such as lists of repositories, suggested texts, OER search functions, and best practices to help him canvass the space for usable content. Once Benjamin understood where the content was located, he vetted the content to ensure that it met the learning outcomes he’d set out for the course and the content standards the Foundation put in place. He had the authority to judge what content to use and was given the liberty to remix where necessary.

Once Benjamin designed the course and completed the process of adding content where necessary, he designed a comprehensive final assessment. While each of the Saylor Foundation’s courses includes one final assessment, administered to students in Moodle, it is in the process of developing outcome-aligned assessment cycles for each of its courses. Many of its courses already include additional assessments such as problem sets and answers, short answer prompts with self-assessment rubrics, exercises, and reading questions with guides. Once these pieces are in place, the course passed through peer review. The Saylor Foundation has a peer review facilitator in each discipline find three qualified professors with teaching

experience in that subject to complete comprehensive peer review packets, and then, based on those results, ask a qualified professor to implement the edits to the course.

The Saylor Foundation has employed this procedure for over 200 courses currently available on Saylor.org, and has found that, by working with credentialed University professors, these courses provide the knowledge equivalent to what students might encounter in the same areas of study at traditional academic institutions.

### **Benefits for the Academic and Open Education Community**

The Saylor Foundation's structured aggregation technique addresses all four of the initially stated problems while offering salient benefits to all stakeholders in the OER space. Since the Foundation launched Saylor.org, it has found that its online courses have provided a multitude of benefits not only for prospective students, but also for academicians and members of the open education community. Those benefits can be categorized as follows:

#### **1. Saylor.org addresses the needs of students and educators**

The mission of the Saylor Foundation is to harness technology to make education freely available to all, an initiative that was initially put into place to spread knowledge to self-learners across the globe. It recognizes that millions of individuals across the globe face barriers to receiving an education in a traditional brick and mortar institution. By setting up courses to closely align with what is offered at traditional universities and making them freely available on Saylor.org, the Saylor Foundation provides an opportunity for any individual who is seeking an education in 12 complete, common areas of study.

Saylor.org addresses the needs of students and educators searching for content by contextualizing and vetting content. Students visiting Saylor.org will know that a professor has canvassed the web on his or her behalf and, therefore, that they can trust the quality of content contained in each course. They will also understand how content fits within a chosen course and its projected outcomes.

In 2012, the Saylor Foundation will add an element of community to its self-paced, automated courses through its ePortfolio system. With this optional system, students have the ability to plan their course of study, print or send by email a transcript for employers, share course information with their friends through social networks, and, to assist individuals seeking a community, meet fellow Saylor.org students.

As more resources and courses are added to Saylor.org, the site addresses an important need for educators throughout higher education: the need for readily available courseware and resources to help save on the labor and resources required in preparing course materials. Saylor.org courses provide a turnkey solution for educators looking to drive down costs for their institutions and students. Professors can literally pull entire courses from Saylor.org and teach them at an accredited institution. Alternatively, should professors and educators prefer to use only a few OERs to supplement their teaching, Saylor.org's Media Library, set to launch in 2012, will allow them to quickly search for and easily access OERs to utilize and create their own low-cost course materials.

#### **2. Saylor.org adds new, openly licensed materials to the Open Education space.**

The Saylor.org course creation process, including the course structure, framing of resources, introduction to units, is built entirely under a CC-BY license. As a result, it contributes to the Open Education space basic pathways and course structures that anyone, anywhere can use.

In addition to these course structures, the Saylor Foundation's consulting professors build and assemble existing OERs to insert into its courses, a process that allows them to identify gaps in existing content and avoid unnecessary duplication. After the consulting professors create the course blueprint as well as search for and vet OERs, they are able to assess where OERs are missing. In some instances, the Foundation will contract that professor to create new openly licensed materials to fill those gaps.

Benjamin Schwantes, for example, found that there was little A/V content for HIST212, and that the course could benefit from a stronger narrative delivered throughout. He developed his own lecture series using low-budget screen capture software in order to narrate HIST212, and the Saylor Foundation subsequently issued this series under a CC-BY license.

Similarly, the Saylor Foundation has found a number of gaps in terms of the availability of high quality, openly licensed textbooks. To combat this issue, it has launched an Open Textbook Challenge, through which it encourages textbook authors to relicense their textbooks under a CC-BY license. Submitted texts that pass the Foundation's peer review process and align with an eligible course on Saylor.org are entitled to a \$20,000 prize and will be made freely available via Saylor.org.

In other cases, the Saylor Foundation's consulting professors advise that little high-quality openly licensed content exists, and that they prefer to use freely available, copyrighted content that an institution or professor has posted to the web. Because the Foundation aims to make use of the wealth of content that has been made available to the world, free of charge, its consultants link to external webpages. The Foundation's Permissions Team then reaches out to copyright holders to ask whether they will consider relicensing their content under a Creative Commons license or whether they are open to granting the rights to host their content on Saylor.org. The results of this initiative have been mixed: many individuals are afraid of an open license; some have agreed; and the majority decline to relicense and yet still grant the Foundation permission to host their content on Saylor.org. Through this process, the Saylor Foundation works to raise awareness of Creative Commons and the importance of being open in education. The feedback received from each of these educators has proved invaluable, as it helps the Foundation to better craft its messaging and approach with these constituents.

To date, the Saylor Foundation has developed "content partnerships" (arrangements in which it secures the rights to host external content on Saylor.org) with hundreds of organizations and individuals, including the Ohio University Press, The Carnegie Council for Ethics in International Affairs, and the Heritage Foundation, amongst others. Of the over 1,300 pieces of content it has received permission to host, less than 5% have re-licensed under Creative Commons. This result speaks to the two opposing forces defining the open education space, the scenario in which the academic community is hedging towards a more "open" model while still wanting to keep things closed up, secured, controlled.

The Saylor Foundation plans to continue its mission to add more free knowledge to Saylor.org and the Open Education community by forging ahead with its Permissions Initiative, Open Textbook Challenge, and other programs.

### **3. Saylor.org draws attention to new content providers.**

Lastly, through programs like the Open Textbook Challenge and the Permissions Initiative, the Saylor Foundation helps highlight the work of content providers who have previously remained relatively undiscovered due to closed systems. It has been the Foundation's objective to use and convert as many CC-BY licensed resources as possible in order to encourage the



reuse and sharing of these resources. As most individuals in the Open Education community are aware, the CC-BY license provides maximum impact in terms of dissemination and reuse. As Saylor.org materials are shared and redistributed, authors who choose to share their works under CC-BY have the opportunity to become well-known and, more importantly, to have their works be added to and ultimately contribute to the sum of human knowledge.

By promoting openly licensed materials, encouraging users to share with their peers on social media outlets, and suggesting that professors utilize OERs to create low-cost course materials, the Saylor Foundation provides another way for textbook authors and professors to increase their visibility and to add their work to the academic discourse, outside of traditional publishing.

## **Conclusion**

When the Saylor Foundation first entered the Open Education space in 2008, it embarked on a quickly growing community of freely available educational resources that was missing pathways for students looking to work through these free resources in a meaningful way. To add to this community, the Foundation has created a fine-tuned process to connect the dots of OERs and freely available educational materials, and curate complete, college-level courses, which it in turn hosts on its website, Saylor.org. This process has enabled the Foundation to address the needs of students and educators, add new openly licensed resources and materials to the Open Education space, and provide a new outlet for authors and publishers, thereby addressing many of the concerns and issues that arose after the initial survey of the space. As the Saylor Foundation prepares to add additional areas and levels of study to Saylor.org, its staff hopes to collaborate with and contribute to the Open Education community to push the OER space even further, and, more importantly, work to open doors for knowledge-hungry individuals across the globe.

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# Cost Savings, Learning Impacts, and User Perceptions of Open Textbooks

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## Abstract

Proponents of open educational resources claim that significant cost savings are possible when open textbooks displace traditional textbooks in the classroom. Over a period of two years we worked with twenty high school science teachers (collectively teaching approximately 3500 students) who adopted open textbooks to understand the process and determine the overall cost of adopting an open textbook. The teachers deployed open textbooks in multiple ways. Some of these methods cost more than traditional textbooks; however we did identify and implement a successful model of open textbook adoption that reduces costs over 50% compared to the cost of adopting traditional textbooks. In addition, we examined the standardized test scores of students using the open textbooks and found no apparent differences in the results of students who used open textbooks. Finally, we investigated student and teacher perceptions of open textbook quality in a community college context. Results revealed that, overall, students and faculty had a very positive experience using OER in their classroom for a wide range of reasons.

## Keywords

Open Educational Resources (OER); K-12; community college; open textbooks; textbook quality; cost savings; learning outcomes

## Introduction

Public education budgets continue to shrink, while the public's expectations for the performance of its educational institutes continue to increase. This tension places many school districts in a difficult position as they attempt to find ways to do more with less (Odden, et al. 2007). Over the last two decades, textbooks and other educational resources have repeatedly undergone scrutiny in an effort to determine whether the amount of learning they facilitate justifies their costs (Card & Krueger, 1996; Chaudhary, 2009; Hanushek, 2002). Open education resources (OER), educational materials that are available at no cost and under open copyright licenses or in the public domain, offer an alternative to traditional textbooks and resources. In addition to potentially saving school and district resources, OER can also be adapted to individual circumstances, printed on demand or used in digital formats, and leveraged to enable new pedagogical practices.

Over the past fifteen years, extensive efforts have been made to create OER to improve education around the world. These OER have been touted as having the ability to improve education by making educational resources more accessible ([www.capetowndeclaration.org](http://www.capetowndeclaration.org)). Numerous projects have been undertaken to develop OER, including the creation of OpenCourseWare hosted by MIT and other universities ([www.ocwconsortium.org](http://www.ocwconsortium.org)), education modules like those available by Connexions ([cnx.org](http://cnx.org)), openly available textbooks such as those offered by CK-12 or Flat World Knowledge ([ck12.org](http://ck12.org); [www.flatworldknowledge.com](http://www.flatworldknowledge.com); Hilton & Wiley, 2011; Hilton & Wiley, 2012), openly available classes (Fini, 2008), and Massively Open Online Courses (MOOC) (Mackness, Mak, & Williams, 2010; Fini, 2009).

While great efforts have been undertaken to create OER, much less has been done to examine its use and impacts. Important questions remain: Are people actually using these OER? Are OER as effective as traditional educational resources? Does using OER actually save money? How do students and teachers perceive the OER that they use in the classroom?

## **Background and Literature**

Minimal research has been done to answer the questions outlined above. But a small and growing body of research about using OER effectiveness does exist. For example, OER allow teachers and students to remix content in locally meaningful ways, to share a variety of types of learning resources, and to enable the best resources for teaching a specific topic to be more easily found. OER have received considerable attention in higher education (Baker, 2008; Koch, 2006) and researchers are examining the question of how students are receiving open textbooks and how these textbooks affect student learning (Frith, 2009). Petrides et. al (2011) have begun a study examining how using an open textbook affects teacher and student experience, and Hilton and Wiley (2011) followed the efforts of a school district that began using open textbooks based on CK-12 materials for three science courses. The latter author found that the district did in fact save money and there was no change in student outcomes.

Most recently, Schmidt-Jones (2012) sought to discover the extent to which the OER repository Connexions was being used. She found that this collection was being used particularly to support just-in-time learning. Nevertheless, no existing research empirically validates the arguments that (a) open educational resources can save public schools money, or (b) that open educational resources can promote deeper learning for students in public schools. What's more, we know of no research that explores how students and teachers perceive the cost and quality of the OER they use.

Curriculum materials are an important part of student learning and represent a significant, recurring cost to public schools. In the United States, core high school science textbooks (without supplemental materials) from commercial publishers cost \$80 - \$120 per copy and teacher editions typically cost over \$100 per copy. More problematically, the economic difficulties presented by the rising cost of textbooks can translate directly into pedagogical challenges, especially at the K-12 level. In the best cases, where schools / districts can afford to provide students with up-to-date textbooks, these materials must be preserved and reused for several years. Consequently, this preservation mindset translates into prohibitions on student highlighting or note taking in textbooks, which makes studying cumbersome and difficult. This is unfortunate, because, annotating textbooks has been shown to be an effective learning strategy (Simpson & Nist, 1990; Lebow, Lick, & Hartman 2004; Wolfe & Neuwirth 2001; Annis & Davis, 1978; Fowler & Baker, 1974). In other cases, students are forced to share books or go without a book because their school or district cannot afford to purchase textbooks in a difficult budget year (Orfield & Lee, 2005). Clearly, textbook sharing arrangements prevent many students from being able to take books home for after school study. Similar problems can exist at the college level when the cost of required textbooks becomes prohibitively expensive for low-income students.

## **Methodology**

We examined the use of OER at both the K-12 and college levels.

**K-12 Use of OER.** Seven middle or high school science teachers in the state of Utah replaced their commercial textbooks with open textbooks for one academic year. The teachers were instructed to continue to supplement the text with online and additional materials and activities in ways consistent with their previous classroom practices. The textbooks used by these teachers were published by CK-12, the largest publisher of K-12 open textbooks in the United States. The CK-12 authoring model uses classroom teachers to do initial writing with subsequent review and refinement by subject-matter experts (e.g., university faculty with PhDs in the content areas).

In the 2010-2011 school year, teacher participants were drawn from three of the largest public school districts in Utah. These districts educate about one fourth of all Utah's school children (approximately 120,000) and employ over 4,000 teachers. Each teacher customized their open textbook to a different degree (editing, adding, and removing material), which drastically impacted the costs of the books, as described below. As instructed, teachers continued to supplement the open textbooks with additional resources and activities in exactly the same manner that they have historically supplemented traditional textbooks. Approximately 1,200 students used open textbooks during the 2010-2011 portion of this study. Most used printed versions of the open textbooks, while approximately three hundred used online versions of the books on netbooks or iPads.

At the beginning of the study, researchers and representatives from the CK-12 Foundation met with participating teachers and provided one day of training regarding open educational resources, CK-12 textbooks, and the technical platform provided by CK-12 for adapting books; another full day of training was dedicated to hands-on practice adapting textbooks with support provided directly by CK-12 personnel and researchers. In order to determine whether or not a cost savings was associated with using open textbooks we compared the price of adopting open textbooks to the price of adopting traditional textbooks. Although significant effort can go into locating, vetting, and selecting open textbooks, there is also significant effort put into locating, vetting, and selecting traditional textbooks. Consequently, we do not factor these costs into our comparison.

Because open textbooks are designed to be adapted and modified for the local context in which they are used, the time spent in the adaptation process can be a significant factor in the cost of adopting open textbooks. Consequently, we explicitly accounted for the time teachers spent modifying open textbooks when comparing these costs to the market price of a comparable traditional textbook. The amount of time participating teachers spent modifying the open textbooks varied widely (see Table 1).

Table 1. *Summary of Teacher Efforts to Modify Open Textbooks 2010-2011*

<b>Teacher identifier</b>	<b>% of book modified (self-report)</b>	<b>Hours spent modifying (self-report)</b>	<b>Estimated modification cost</b>
Teacher A	10%	20	\$600
Teacher B	50%	4	\$120
Teacher C	40%	24	\$720
Teacher D	1%	6	\$180
Teacher E	0%	0	\$0
Teacher F	75%	60	\$1800
Teacher G	17%	10	\$300

The reader may note that the amount of time spent does not correlate with the amount of modification (e.g. Teacher B spent 4 hours modifying 50% of the book but Teacher C spent 24 hours modifying 40% of the book). This is true because some quick modifications can result in large changes to a book (e.g., removing chapters), while other changes that require a significant investment of time may only result in small percentage modifications (e.g., rewriting an example). Teacher E reported no modification because s/he adopted the modified textbook adapted by Teacher F. Teacher D made essentially no changes to his/her book.

Once teachers had modified and adapted the textbooks according to their needs, CK-12 personnel reviewed the textbooks for clarity and accuracy. (Because CK-12 provides these and other services freely to everyone, we do not factor these costs into our comparison.) Each

teacher then chose the way they would like the textbook to be bound and distributed to their students. Of the seven teachers, three teachers (teachers B, C, and D) chose a loose-leaf option (printed on three hole punched paper and assembled in a three ring binder), two teachers (teachers E and F) chose to print with a perfect-bind option (a print-on-demand, paperback format), and two teachers chose to go completely digital with no printing.

In calculating the total cost of implementing the open textbooks in classrooms, we (1) summed the money paid to teachers for participating in professional development / training activities, (2) estimated the monetary value of unpaid time teachers spent making their adaptations (at a rate of \$30 per hour), and (3) added these to the printing costs (including printing, binding, tax, and shipping or delivery costs). In calculating the total cost of traditional textbooks, we obtained the amounts that schools in our study typically spend on the comparable traditional textbook from the school district offices that handle textbook selection and purchasing. While shipping and other costs are certainly incurred when traditional textbooks are purchased, we do not account for these costs. Consequently, the cost of traditional textbooks is underestimated in our comparison.

In the 2011-2012 school year, principles learned from the previous year were used to adapt our study. Here, teachers met together early and agreed to make careful revisions based on material they would actually need. In addition, we learned from Teacher E that when one teacher adopts another teacher's book, the modification costs per adopting student significantly decrease. Thus, we brought teachers together from just one district, and invited teachers in that district to make one textbook that all would use. This cut down on the number of versions being created and thus the overall modification costs. Many more teachers district participated in 2011-2012, resulting in more students being taught with open textbooks (approximately 2,700 in 2011-2012 versus 1,200 in 2010-2011). While more teachers participated in the pilot, fewer teachers modified the books, thus amortizing the modifications costs across many adopting students.

Finally, to examine the effect of OER on student performance, we analyzed data from the state of Utah's annual standardized tests, known as the Criterion-Referenced Tests (CRT). Specifically, we compared the CRT scores of students whose teachers used the open textbooks to the CRT scores of those same teachers' students in previous years.

**College Use of OER.** At the college-level we explored the question related to faculty and student perceptions of OER cost and quality. This portion of the study was conducted in the context of the Kaleidoscope Project (<http://www.project-kaleidoscope.org>), an ongoing OER initiative funded by NGLC. The Kaleidoscope Project brings together eight colleges serving predominantly at-risk students to create course designs using open educational resources (OER). The project partners collectively serve over 100,000 students per year, 69 percent of which are designated as "at-risk" by each college's internal evaluation.

The Kaleidoscope Project is unique in its focus on supporting institutional adoption of OER, rather than on the creation of new resources. Faculty teams from across the colleges identify and evaluate existing OER for incorporation in the Kaleidoscope course designs. The emphasis on open resources is driven by two project objectives: (a) eliminating textbook costs as an obstacle to the success of low-income students, and (b) allowing faculty greater flexibility in sharing and improving the course resources.

Twenty-seven community college instructors who used Kaleidoscope Project (KP) open texts in their Fall 2011 courses were asked to complete an online questionnaire about their perception of these texts in terms of cost and quality. Requests were made via email containing

a link to the questionnaire in late November, near the end of the semester. Instructors were also provided with a link to a student version of the questionnaire and asked to forward that link onto their students.

## Results and Discussion

**K-12 Use of OER.** Cost comparison results from the 2010-2011 school year are presented in Table 2.

Table 2. Comparison of Cost Data for Open and Traditional Textbooks in 2010-2011

Teacher Identifier	Cost of Teacher Modification Efforts	Cost of Printing & shipping of Open Textbook	Total Open Textbook Cost	Traditional Textbook Cost (1 Year)	Total Savings or (Loss) of Open Textbook	Students Served	Savings or (Loss) of Open Textbook per Student
A	\$600	\$0.00	\$600.00	\$1,565.71	\$965.71	137	\$7.05
B	\$120	\$2,839.47	\$2,959.47	\$2,514.29	(\$445.18)	220	(\$2.02)
C	\$720	\$4,483.13	\$5,203.13	\$2,171.43	(\$3,031.70)	190	(\$15.96)
D	\$180	\$9,935.36	\$10,115.36	\$2,811.43	(\$7,303.93)	246	(\$29.69)
E	\$0	\$918.47	\$918.47	\$1,280.00	\$361.53	112	\$3.23
F	\$1,800	\$1,574.16	\$3,374.16	\$2,171.43	(\$1,202.73)	190	(\$6.33)
G	\$300	\$0.00	\$300.00	\$2,308.57	\$2,008.57	202	\$9.94
Averages	\$531.43	\$2,821.51	\$3,352.94	\$2,117.55	(\$1,235.39)	185	(\$4.83)

As demonstrated in Table 2, the average cost of using open textbooks in 2010-2011 – across a range of levels of teacher adaptation effort, book page lengths, students served, and final format – was higher than the cost of simply adopting a traditional textbook. However, it is also clear from this data that some of the specific models of using open textbooks were less expensive than simply adopting a traditional textbook. As we analyzed these differences, we began to understand the forces driving costs down on some of the textbooks.

Few of the teachers in the study invested significant adaptation efforts before the school year to prepare their textbooks. Several teachers decided that they would just begin the school year with the complete CK-12 textbook and mark sections for deletion throughout the school year. This approach resulted in books with large page counts and relatively high amounts of irrelevant content. This contributed to the higher costs of the most expensive open textbooks in the study.

Once everything was printed, we were surprised to find that having the textbooks printed in a perfect bound paperback format was cheaper than printing loose-leaf, three hole punched pages and putting them in three ring binders. Many of the teachers believed that the loose-leaf approach would be less expensive when it was, in fact, much more expensive. Some teachers who used the less expensive print-on-demand approach wanted to print their books in several parts. Instead of a single 500-page book, for example, they printed five separate 100-page books. This tactic proved to be extremely expensive, as the “setup” cost of running the print job was incurred five times rather than once.

Finally, we did not print large numbers of any of the books (relative to publisher standards for large orders). Because significant printing discounts are tied to making very large orders (over

1,200 books for the best discounts from Lulu, a typical print-on-demand vendor), our smaller orders contributed to higher per book costs.

To summarize, the easiest way to spend more money on open textbooks than traditional textbooks is to simultaneously:

- Fail to exercise any of the adaptation / revision rights provided by open textbooks, adopting longer books that contain unnecessary information,
- Print these longer books on loose leaf paper and put them in three ring binders,
- Disaggregate these longer books into multiple smaller books, and
- Print small numbers of the books (100 - 200 copies).

Applying these principles to the 2011-2012 set of open textbooks drastically decreased the cost of the books. Table 3 presents the 2011-2012 cost data in the same format as Table 2 above.

Table 3. Comparison of Cost Data for Open and Traditional Textbooks in 2011-2012

<b>Teacher Identifier</b>	<b>Cost of Teacher Modification Efforts</b>	<b>Cost of Printing &amp; Shipping Open Textbook</b>	<b>Total Open Textbook Cost</b>	<b>Traditional Textbook Cost (1 Year)</b>	<b>Total Savings or (Loss) of Open Textbook</b>	<b>Students Served</b>	<b>Savings or (Loss) of Open Textbook per Student</b>
Earth Systems	300.00	3,726.18	4,026.18	8,458.20	4,302.02	740	5.99
Biology	1800.00	6,695.64	8,495.64	13,716.00	5,220.36	1,200	4.35
Chemistry	300.00	3,978.08	4,278.08	8,572.50	4,294.42	750	5.73

The changes in implementation strategy made a large difference in cost. In the revised model used for the 2011-2012 school year, open textbooks represented a large cost savings for the district. To summarize, the easiest way to save money on open textbook adoptions compared to traditional textbooks is to simultaneously:

- Exercise the adaptation / revision rights provided by open textbooks, removing all unnecessary information,
- Print these shorter books as black and white paperback books through a print-on-demand vendor like Lulu.com,
- Print each book as a single book rather than disaggregating them into smaller pieces, and
- Print relatively large numbers of books (ideally 1,000 or more copies).

While our original design called for CRT scores for 2011 and the three previous years for every teacher, these data were not available. Some of the teachers in the study were new (no data beyond 2010) and some had changed schools, making it difficult to get data beyond 2010. While these limitations were real, we did receive the 2011 and 2010 CRT scores for each teacher, as well as the 2009 scores for four of the participating teachers. Given so little data we can only present a descriptive analysis. However, given the lack of research and data in the space overall, we that feel even a simple analysis is worthwhile. First we calculate change scores from the 2010 and 2011 data and describe the measures of central tendency of this small data set. Table 4 shows the change scores.

Table 4. Change in CRT Scores for Teachers Using Open Textbooks 2010-2011

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F	Teacher G
Change	+1	-5	-4	-1	+14	+23	-8

The mean of this distribution is +2.86% and the mode is -1%. By either measure of central tendency, the substitution of open textbooks for traditional textbooks does not appear to correlate with a significant change in student outcomes. For context, Table 5 presents the change in CRT scores statewide from 2010 to 2011 in the three content areas covered in this study as reported by the Utah State Office of Education ([www.schools.utah.gov/assessment/reports.aspx](http://www.schools.utah.gov/assessment/reports.aspx)).

Table 5. Statewide Changes in CRT Scores in Three Subjects 2010-2011.

Subjects	2010	2011	Change
Biology	72%	72%	0%
Earth Systems	69%	66%	-3%
Chemistry	54%	52%	-2%

Adding the 2009 data where available will give a slightly more robust picture of what is happening. Table 6 shows the change between the 2011 scores and either the average of the 2009 and 2010 scores (when both are available) or the 2010 scores.

Table 6. Change in CRT Scores for Teachers Using Open Textbooks Comparing 2009-2010 average scores with 2011 scores

	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F	Teacher G
Change	.5	-5	-4	-1	+9	+23	-5.5

The mean of this distribution is +2.43% and the mode of -1%. Again, by either measure of central tendency, the substitution of open textbooks for traditional textbooks does not appear to correlate with a meaningful change in student outcomes.

**College Use of OER.** Eleven of the twenty-seven instructors responded to our survey. These teachers represented eleven subject areas from seven different community colleges responded to the questionnaire. All instructors have taught the course in which KP texts were used at least 3 times prior to the Fall 2011 implementation. Ten of the instructors discussed the experimental nature of KP texts with their students. In fact, six instructors (55%) discussed the project more than five times throughout the semester.

Some of the cost associated with open texts includes instructor preparation time. Since all instructors were using KP texts for the first time, we asked them to compare time spent preparing to teach during the Fall 2011 semester with time spent in previous semesters. No instructor indicated spending less time, and most (82%) felt they spent *somewhat more* or *much more* time preparing to teach in Fall 2011 than in previous semesters. This result points to a somewhat hidden cost of initial implementation of open texts for these instructors, but it is not known whether these costs are any different from those incurred when implementing any other kind of text for the first time.

Five of the responding instructors were personally involved in the development of KP texts used in their courses. Those instructors not involved in text development were asked to rate the quality of the open texts compared to texts they have used in previous semesters. All six of these instructors indicated that the KP texts were of about the same quality as texts used in



their other courses. Instructors who were involved in creating the texts were not asked to evaluate them. Perhaps the strongest endorsement of open textbooks received via this questionnaire is that all instructors indicated that they would be very likely to use open texts in future courses.

One hundred twenty students representing eleven subject areas from seven different community colleges completed the student questionnaire. Most students (64%) reported using textbooks at least two to three times per week in a typical course. For courses with KP texts, a similar pattern was seen: 60% of students reported using KP texts at least 2-3 times per week. Students were also asked to compare KP texts to other kinds of texts. Only 4 students (3%) felt that KP texts were worse than the quality of texts in other courses, while 67 students (56%) selected about the same as the quality of texts in other courses and 49 students (41%) selected better than the quality of texts in other courses.

At the same time, 52% of students reported liking the online format more than traditional printed texts, 17% liked the online format less, and 31% had no preference. Many students (77%) also reported that they would be very likely or somewhat likely to register for a future course with online texts similar to KP texts.

In order to more fully understand why students perceived KP textbooks as they did, students were asked to provide open responses to a few items. Very few students (3%) indicated that the KP texts were worse than texts in other courses and were asked to explain why they felt that way. Students who indicated that the KP texts were better than texts in other courses cited presentation, economics, and online accessibility as major reasons for their positive view. Within the presentation theme, students indicated that the KP texts were easier to understand (16 students), well-organized (8 students), aligned with classroom content (7 students), interactive or searchable (6 students), visually appealing (4 students), and interesting (1 student).

Finally, students were asked to respond to the open-ended question: "Overall, what do you think of the texts used in this course?" Of the 98 responses, only nine (10%) were completely negative, fourteen (14%) were a mixture of positive and negative, and 75 (75%) were completely positive. The student comments containing negative perceptions included eight main themes: (a) low visual appeal, (b) website issues, (c) online navigation problems, (d) general text uselessness, (e) note-taking limitations, (f) lack of text options, (g) internet access issues, (h) low readability.

Positive student responses, on the other hand, revolved around seven main themes: (a) feeling, (b) content, (c) presentation, (d) positive adjective, (e) text comparison, (f) online accessibility, and (g) economics (Table 1). Each of these major themes had several sub-themes. For instance, students reported that they liked, loved, enjoyed, or recommend the KP texts (feeling theme); found the texts informative, useful, or effective (content theme); thought the KP texts were easy to understand, well-organized, clear, concise, engaging, or visually appealing (presentation theme); used one or two descriptive words to describe the texts, including excellent, great, fine, perfect, very good, high quality, convenient, and awesome (positive adjective theme); felt the KP texts were better presented, more convenient, better organized, or a more effective learning resource than other texts they have used (text comparison theme); mentioned KP text availability, mobility, searchability, or efficiency (online accessibility theme); and indicated that KP texts were free, cheap, good for poorer students, or saved them money (economics theme).

## Discussion and Limitations

While there are ways to deploy open textbooks that actually add to curriculum costs (some of these are identified above), models do exist that provide significant cost savings. The model described above reduced textbook costs by just under 40% in the first year (when the majority of the adaptation was performed) and over 50% in subsequent years, when compared to the cost of using traditional textbooks. No change in educational outcomes was detected.

The study does have substantial limitations. First, it was carried out in the United States, where easy access to affordable print-on-demand services exists together with other factors that may confound the generalizability of the findings to other countries. In addition, the cost savings we realized only happened when we worked with a single district. We acknowledge these limitations and hope this initial study inspires others in both additional and larger contexts.

Simply substituting open textbooks for traditional textbooks did not appear to have an effect on student test scores. However we stress the limited nature of the data presented above. Future studies need to expand both the number of teacher and student participants and the sophistication of the consequent analysis.

One area of particular interest is the teachers whose classes saw relatively large (23% and 14%) increases in their CRT scores after adopting open textbooks. One of these teachers said, “The betters students write in their textbooks more.” If this anecdote turns out to be representative of a broader phenomenon, we hypothesize that student test scores will improve when professional development is provided to teachers to help them understand the new activities and pedagogies made possible by the open textbooks (e.g., students highlighting and taking notes directly within the books). Even without significant improvements in student learning outcomes, reducing the cost of textbooks by half with no net loss in learning appears to be a result of tremendous practical significance given the state of the global economy.

At the college level, most faculty and students who responded to our questionnaire recognized and appreciated the low cost of KP texts and perceived them as being of high quality. Although we did not define the term quality for the survey respondents, the themes that emerged from the open-ended questions give us a picture of what aspects of an open text are important to both faculty and students. Specifically, the presentation of the text, including visual appeal, organization, and readability, the online accessibility, the alignment of text content with classroom content, and economic efficiency all seem to play a part. However, students who had negative perceptions of KP texts reveal that some of KP texts’ major strengths (in terms of quality) can also become weaknesses. When students have poor internet access, when the texts are not well maintained and organized, or when students experience screen fatigue, KP texts are not seen as being as useful or as having as high quality as traditional print texts.

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# **Creative Commons and the Department of Labor US\$2 Billion Grant Program (CC BY required): Update and early Project Plans**

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## **Abstract**

In February 2011 the U.S. Department of Labor announced the Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant program, which will make available up to \$2 billion over the next four years for community colleges to develop educational and career-training programs for displaced workers. An exciting condition of the funding is that all resources must be licensed under a Creative Commons Attribution License (CC BY), making TAACCCT the largest federal investment in OER to date in the United States.

Creative Commons worked quickly with its partners the Carnegie Mellon Open Learning Initiative, CAST, and the Washington State Board for Community and Technical Colleges to conceive and develop a set of infrastructure services and support for TAACCCT grantees. Creative Commons has received funding from the Bill and Melinda Gates Foundation to lead this effort. The set of comprehensive services will lend technical support to grantees in meeting the open licensing requirement and ensure the interoperability of education and training materials. In addition, the services will guide grantees to adopt best practices for OER course design and technology, instill institutional knowledge and policies aligned with open licensing, and incorporate a robust evaluation component to track successful progress so that subsequent rounds of TAACCCT funding continue with the important open licensing provision intact.

This paper provides an overview on the work planned by the Open Professionals Education Network (OPEN) (<http://open4us.org>). Cable Green, Director of Global Learning at Creative Commons will preview the services being provided to the first wave of grantees, and discuss the vision and planned activities for future funding rounds, and for scaling open licensing to other government programs more generally.

## **Keywords**

OER, US Department of Labor, Open Policy, CC BY, community colleges, Creative Commons, OLI, CAST, SBCTC

## **Project Overview**

The \$2 billion Trade Adjustment Assistance Community College and Career Training Grant (TAACCCT) program from the U.S. Department of Labor (DOL) represents a once-in-a-lifetime opportunity for building a community college curriculum based on best practices for teaching, learning and openness. While exemplary design principles are contained in the DOL grant, looming challenges for effective execution and support of grantees remain. Strategic intervention from expert resources is critical. We must both raise the baseline for community college education based on best practices, and foster an exponential spread of the benefits.

OPEN (<http://open4us.org>) is a collaborative effort of Creative Commons (CC), Carnegie Mellon Open Learning Initiative (OLI), Center for Applied Special Technology (CAST) and the Washington State Board for Community & Technical Colleges (SBCTC). We will provide comprehensive infrastructure support and capacity building to all DOL grantees to help them meet the OER requirements of the grant, adopt best practices in OER and learning design, develop institutional skills in open licensing, and document successes critical to ensuring future rounds of funding. These services address a missing component of the TAACCCT grant

program, and create a true multiplier effect by developing systems that are adoptable and adaptable, and that enable the broadest possible benefit from this huge public investment.

Creative Commons will provide technical support in meeting the open licensing requirement and ensuring interoperability of content. OLI brings expertise in applying results from the learning sciences to the design, implementation, evaluation and continuous improvement of open web-based learning environments. OLI will work with CAST, pioneers in the field of Universal Design for Learning (UDL), to offer all grantees technical support and enabling technologies to ensure that all of the digital content and learning environments developed in this project succeed with the widest range of learners possible.

SBCTC is one of the lead community college systems in the United States fully embracing OER and open licensing, and will work to develop best practices in adoption and use, policies and professional development that work for all participating institutions.

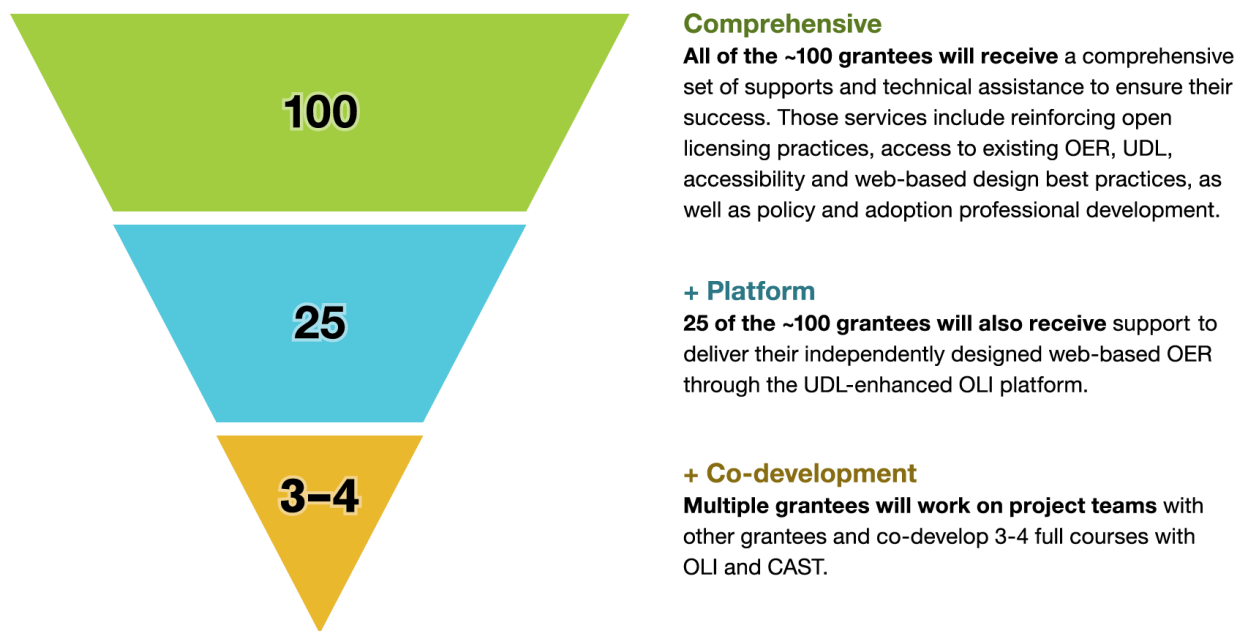
OPEN will advocate for the adoption of best practices, foster collaboration and build the capacity of all DOL grantees, ensure interoperability of content, work for maximum adoption and impact as projects move to scale, innovate in web-based learning environments, and evaluate all aspects of the work in order to contribute to greater effectiveness of future US federal grants and any other government grant. By working with TAACCCT grantees, we will ensure that this massive infusion of support for post-secondary education improves opportunities for all students enrolled in community colleges in the United States and around the world.

### **Project Description**

OPEN will provide comprehensive infrastructure support and capacity building to TAACCCT grantees designed to maximize their impact and ensure that all educational products that they create contribute as broadly as possible to the improvement of post-secondary education.

Such an effort, and private support, is required because the TAACCCT funding legislation did not include funding for technical assistance in implementing key requirements of the grant, nor did it provide a mechanism for collaborative work among grantees. While open licensing of educational materials is a requirement, most community colleges have little experience with open licensing protocol and practices. Even fewer have transitioned to effective web-based learning environments. Without these core infrastructure supports, the thoughtful principles and significant funding from TAACCCT could result in old technology and methodologies being perpetuated, rather than leading to the creation of a new standards supported by decades of knowledge on best practices. By offering these supports to the entire pool of grantees, we are also able to encourage collaborative linkages that can significantly further the goals of the grant.

To address these critical support and infrastructure needs, four leading organizations in the field of open educational resources have formed OPEN to work collaboratively and synergistically to provide a tightly integrated response to the technology and best practice challenges. All, approximately 50 grantees will receive comprehensive infrastructure support and capacity building. A smaller subset called Plus Platform will utilize a UDL-enhanced OLI platform to host their own web-based OER. A group of three to four Plus Co-development grantees will be selected to engage in a full OLI/CAST design process for OER on the UDL-enhanced OLI platform (as shown in the graphic and described in further detail below).



### ***Comprehensive Infrastructure Support and Capacity Building***

OPEN will provide every TAACCCT grantee a comprehensive set of supports and technical assistance to ensure their success. Those services include reinforcing open licensing practices, increasing access to existing OER, UDL, accessibility and web-based design best practices, as well as professional development in critical policy and adoption practices. Every effort will be made not only to link grantees with existing resources, but also to encourage linkages among them to maximize benefits and build open licensing capacity in the community college space. Willingness and resources to work collaboratively will be part of our initial survey of each grantee.

### **Open Licensing Support**

In an obvious recognition of the utility of the Creative Commons framework, the TAACCCT requires that all materials created using grant funds be released under the Creative Commons Attribution 3.0 (CC BY)<sup>11</sup> license. Creative Commons is well suited to explain its licenses and tools (especially CC BY) to DOL grantees, and has extensive experience in adapting explanatory documentation and outreach to various audiences.

As one of the world's leading authorities on open licensing, CC has worked with organizations large and small to meet the challenges of effectively sharing their content. For OPEN, CC will focus on helping grantees implement the creative commons attribution (CC BY) license. CC will work with them to ensure maximum impact by guiding grantees to follow best practices for content production and rights clearing in the context of open licensing ("IP hygiene"), publishing with machine-readable metadata, and integrating CC BY in all elements of content creation software. This work will build internal capacity as CC works with legal, technology and publishing departments at each institution, training their staff to become skilled implementers of open licensing.

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<sup>11</sup> The Creative Commons CC BY license allows sharing and remixing of content with proper attribution to the creator or licensor: <http://creativecommons.org/licenses/by/3.0/>

While these are time-intensive relationships due to common fears about open licensing, institutional resistance to change, and the need to tailor each conversation to the specifics of each distinctive institution's resources and culture, correct implementation in the first wave is critical to the success of subsequent waves of the DOL grant. If we hope to preserve the significant opportunities for downstream innovation, it is essential that CC BY is not just language affixed to documents to meet a grant requirement, but rather an actual commitment to the principles and practices of open licensing.

Creative Commons will also help build awareness of existing public domain and CC BY educational materials, create links to existing OER networks, and provide legal, technical and social implementation best practices through phone and e-mail consultation and in-person training.

To promote use of existing OER and CC-BY licensed content we will:

- educate all DOL grantees on OER and CC BY licensing, including how to find and download existing OER resources;
- create search and discovery federated searches, by industry sector, to make it easy for the DOL grantees to find existing open content; and
- produce lists of OER in each industry cluster.

Finally, Creative Commons will lead OPEN in organizing three National Summits (in-person & online) and multiple (live & archived) webinars on adoption and re-use of TAACCCT open content. These will include a kick-off/planning, mid-project, and a final sharing/adoption conference. Events will be scheduled in locations across the country and advance goals for adoption and education on best practices. TAACCCT grantees will be surveyed prior to each summit to ensure the summits' agendas are aligned to grantees' needs.

As TAACCCT applicants become increasingly aware of OER, they have begun requesting assistance in identifying existing OER content to review, rather than having to start from scratch. Looking forward to Waves 2, 3, and 4, we can envision the continuous cycle of improvement and sharing yielding an enormous impact and accelerating the creation and adoption of high-quality OER. SBCTC has been working on these same issues in its Open Course Library project. This project will leverage both lessons learned and OER lists created<sup>12</sup>.

Most importantly, CC will lead knowledge sharing and further development of materials and policies to ensure the open content resources are interoperable, promote downstream innovation, and create the conditions necessary to produce better learning outcomes. This requires work beyond providing information and consulting to individual grantees. This component will include working with software vendors and other providers common to multiple grantees to improve built-in support for open content best practices, thereby streamlining and improving further implementations. CC will also work with potential external consumers of funded materials such as search engines and international communities to directly increase the discoverability, dissemination and impact of funded materials. A series of summits and workshops will be utilized to share knowledge and train grantees.

All grantees will qualify for these services. We plan to utilize [completionmatters.org](http://completionmatters.org) or a comparable online collaboration tool to connect them to the work and to each other. When either need or opportunity suggests, CC is prepared to tackle high-opportunity/high-payoff projects to offer more intensive services to ensure positive outcomes. We will look for projects

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<sup>12</sup> For example, see the Open Course Library matrix of OERs for its 81 courses: <http://tiny.cc/ocl-81-matrix>



with the highest possible return on investment. As a greater number of institution in the community college arena gain skills and successfully adopt, repurpose and publish OER, the likelihood of future success in all community colleges increases as well.

### **Course Design and Best Practices**

Carnegie Mellon University OLI leverages learning science and emerging information technologies to design web-based interactive open educational resources (OER) that reduce cost and increase effectiveness in higher education. OLI provides a methodology and platform for developing, delivering and continuously improving the OER.

The Center for Applied Special Technology (CAST), the research and development organization that pioneered the field of Universal Design for Learning (UDL), will provide expertise and enabling technologies to ensure that all of the digital content and learning environments (including the technical assistance programs) developed in this project are designed to succeed with the widest range of learners possible – including those with disabilities, English language learners, students who are disadvantaged in prior education and others needing special consideration. The necessity of embedding UDL principles in OER developed materials has been a valid critique of OER. This proposed project creates a timely and needed intervention in the evolution of OER developed materials that will further extend reach and impact.

CAST will provide expertise in UDL and ensure a proper application to the needs of community and technical college students. CAST will also advise grantees on how best to implement complementary standards pertaining to accessibility (IMS “Access for All” and Section 508) and learning that addresses learner variation. (CAST is presently facilitating the Higher Education Commission on Textbook Accessibility for the U.S. Congress). In addition, CAST will help grantees to consider how to implement the APIP assessment item standard that supports matching assessment accommodations and features with individual student needs. This will ensure that learners are able to truly demonstrate what they know and can do. CAST will consider how similar matching could be implemented within the learning delivery systems.

Together, OLI and CAST will develop web-based technical assistance resources including a robust website and webinars designed to support community and technical colleges in implementing OLI learning guidelines, the UDL framework and techniques and technologies for complying with accessibility standards in the creation of web-based learning environments. Specific materials and strategies will be provided to ensure that the course designs implement aspects of Universal Design for Learning (UDL) most likely to provide improved learning outcomes. OLI will create an OLI course on Effective Course Design that will be available as an open and free OLI course.

### **Making the Case: Policy and Best Practices**

The Washington State Board for Community and Technical Colleges (SBCTC) will utilize its system-wide experience in adoption, re-mix, re-use and distribution of OER to help grantee institutions develop best practices and policies that take full advantage of the TAACCCT grants and process.

SBCTC will draw on its own experience to develop policy best practices and demonstrate how the TAACCCT open content can most effectively be adopted and re-used, as widely as possible, with the most local buy-in, with minimal resistance. SBCTC will also demonstrate how a mix of strong faculty support and multi-direction strategic pressure points (students,



faculty, deans, provosts, presidents, trustees, and legislature) can speed adoption of quality openly licensed programs, courseware and textbooks.

SBCTC is a national leader in performance-based funding models. Washington's Governor is chair of the National Governor's Association and its Complete to Compete initiative. The system's [Student Achievement Initiative](#) will help to demonstrate how open licensing policies and the adoption of faculty incentives to adopt quality open content can increase student completion rates. SBCTC will help grantees understand the direct connections between OER adoption and performance-based funding.

SBCTC will report and share best practices with all (global) community and technical colleges and partner with existing associations and consortia to leverage existing networks and maximize impact (i.e. Educause, League for Innovations, American Association of Community Colleges, The International Association for K-12 Online Learning, Community College Consortium for Open Educational Resources, etc.).

SBCTC will also use its own 34-college system to advance the process. Multiple Washington Community and Technical Colleges will receive support to pilot TAACCCT open content created during the first grant period. The existing "faculty learning communities" within the WA CTCs will be used to support and advise faculty on adoption and re-use of TAACCCT open content.

To support adoption, SBCTC will develop and provide professional development on adoption and re-use of TAACCCT open content for faculty, deans, provosts, presidents and trustees. The support of these institutional players is critical to scalability and sustainability. SBCTC will also provide proof of concept demonstrations that allow educators and users of content to examine how their peers are using material created under TAACCCT and existing educational resources. SBCTC will create and broadly distribute policy best practices on how the TAACCCT open content can most effectively be accessed, accessed, re-mixed and re-used in digital and print-on-demand formats.

SBCTC will also work with all grantees based on need, with others more intensely based on an assessment of impact and opportunity, an exhibit a preference for the most global inclusion possible in all proposed activities.

### ***Web-Based Learning Environments: Plus Platform and Plus Co-Development***

OLI and CAST will build on this comprehensive set of supports and offer two additional options for deeper involvement in building web-based interactive environments. The **Plus Platform** option will provide support to institutions that choose to design their own OER independently and use the UDL-enhanced OLI platform for deployment. The **Plus Co-Development** option is the most intensive and includes a complete OLI/CAST co-design process and delivery of OER on the OLI platform.

The decision on which approach to take will be made mutually with the grantee. We anticipate selecting 25 Plus Platform grantees and multiple Plus Co-Development grantees who are willing to work together to co-develop 3-4 full OLI courses. The grantees selected for co-development will work together across projects to develop OER that they all agree to use rather than each grantee developing its own OER.

### **Plus Platform**

For Plus Platform participants, OLI and CAST will support grantees that wish to deliver their independently designed web-based OER through the UDL-enhanced OLI platform. OLI and CAST will provide training and tools to grantee technical staff about how to add their content to the UDL-enhanced OLI platform. OLI will collect the interaction level data on student use and make that data available to the grantee to the extent possible given the design of the learning activities and the regulations on privacy of student data.

As part of this grant, CAST will enhance the OLI platform with UDL functionality by providing both technical expertise and adapting existing tools. CAST platform enhancements will include the capability for authors/curriculum developers and/or students to create:

- multimedia glossaries to support technical vocabulary development;
- animated coaches/agents that can be scripted to provide hints, models, directions, thinkalouds;
- notepads and tagging systems;
- highlighter tools that compare highlighting to an expert model or highlight critical features;
- text to speech tools that enable the reading aloud of text;
- audio record features; and
- drawing tools for students or authors to use as another means of conveying their understanding.

These capabilities could be developed for the OLI platform or provided as modules/tools that can be integrated, embedded, or linked-to depending on the purpose and technology considerations.

### **Plus Co-Development**

The Plus Co-Development services will include complete design and delivery by OLI of OER that are web-based interactive learning environments (ILE). OLI will coordinate and lead OER teams composed of multiple subject matter experts (e.g., faculty, industry experts from the TAACCCT Grantee), CAST UDL experts, OLI course developers, OLI cognitive and learning scientists, OLI Human Computer Interaction experts, and OLI software engineers in a process to articulate the target student-centered measurable learning outcomes for the OER and to design and deliver the OER to support students to achieve those outcomes. OLI will invite grantees from different projects in the same domain to collaborate on a single design team to create an OER that serves all projects. A prerequisite in the selection process will be a grantees willingness to serve on cross-project development teams.

Plus Co-Development OER teams will design web-based ILEs in accordance with current research on human learning, Universal Design for Learning (UDL) principles, Human Computer Interaction usability studies and the affordances of the current technology to support students to achieve the specified learning outcomes. The ILE will be delivered through the UDL-enhanced OLI delivery platform, while collecting the interaction level data on student use to drive the feedback loops to the learner, the instructor, the OER design team, the learning science and UDL communities of practice. Effectiveness of the OER in supporting learners to achieve the articulated outcomes and improve the OER will be evaluated based on data collected through student use.

OLI will provide hosting and delivery to grantees who select either service level described above, including hosting OER content and technical support for students and instructors.

Through Learning Tools Interoperability (LTI), OLI will also make it possible for institutions to use their local LTI compliant LMS to deliver courses. Students and teachers will have single sign-on shared authentication.

CAST will integrate UDL considerations with the work OLI is doing on platforms and will provide complementary technical assistance and enabling technologies that have been developed for the National Science Foundation, the U.S. Department of Education, and the Carnegie Corporation of New York.

CAST will enhance the OLI platform with UDL functionality by providing both technical expertise and adapting existing tools. CAST will provide modular technologies for UDL and basic 508 accessibility, modify existing modular technologies to optimize their compatibility and effectiveness within the OLI platform, and provide technical assistance to OLI engineers and learning designers on incorporating UDL technologies to ensure basic accessibility. Additionally, CAST will develop new UDL modules or adapt modules under development to meet the requirements of continuous improvement (as indicated by feedback loops from learning designers, teachers, individual students, etc.), participate in continuous improvement cycles, and conduct usability studies to ensure that UDL functionality is designed effectively across the full spectrum of learners.

Grantees will be consulted about their level of involvement. Selection for these Plus services will be based on criteria including, current implementation of web-based OER, interest in working with other institutions in the same domain area, and willingness to collaborate and use a shared environment. We will favor initiatives with potential in high impact workforce areas.

In addition to the specific services outlined above, OLI will lead a planning cycle to determine how to transition OLI technologies into an open source software project.

### **Implementation and Results**

The tremendous variability in intensity of need among between grantee institutions, leads us to divide this work into two phases. This proposal deals entirely with the first phase of foundational work required to support the DOL grantees. We anticipate the potential for a second phase to respond either to significant opportunities for partnerships that deeply engrain the work, an expansion of successful web-based environment development to a greater number of grantees, and/or more intensive work to meet recalcitrant obstacles to effective implementation of open licensing principles. Phase One will cut a path and allow us to better understand the terrain and how best to respond to these needs and opportunities. Phase Two opportunities will likely be revealed by as early as the first year of the grant.

There are five critical outcomes of our collective work in Phase One and the expected deliverables and activities required to yield these results. The outcomes are structured as follows:

- Comprehensive Infrastructure Support and Capacity Building
- Plus Platform
- Plus Co-Development
- Evaluation
- Adoption and Policy

### **Measurement, Learning, and Evaluation**

Over the long-term, our overarching goals are the following:

- Publicly funded educational materials should be freely and openly available to the public that paid for them;
- Build a strong culture of data-driven continuous improvement and sharing in the post-secondary education sector uniting cognitive science with information technology capabilities;
- Yield higher return on investment in students and workforce development.

To reach these ambitious outcomes, we must begin during the 36-month period of the proposed grant to deliver on a key number of time critical activities and tasks. A detailed evaluation plan will be developed during the first six months of the grant that will include at minimum details of the following elements:

- Surveys for all TAACCCT grantees at the point of selection prior to the initial national conference, mid-point survey prior to the second web-based national conference, and at the end of the 36-month period of the grant. A key early deliverable will be development of the baseline survey that will: identify baseline knowledge of TAACCCT grantees; explore specifics of knowledge gaps; and assist identify potential participants for the Plus Platform and Plus Co-Development OLI/CAST services. CC and SBCTC will also leverage the opportunity of the survey to explore high leverage opportunities;
- Aggregation and anonymized reporting by Creative Commons on questions and problems raised in providing support to grantees, aiming to discover opportunities to ease and improve implementation in future waves of TAACCCT;
- One or more publications by CC characterizing the quantitative and qualitative impact of TAACCCT's CC BY policy, and present opportunities for future improvement and research;
- Effectiveness of the learning environments in supporting the target population to achieve the specified learning outcomes in the courses created and adapted by the OLI Design Teams. OLI will evaluate success on the whole course level using the learning effectiveness study methods developed and applied in existing OLI courses. As part of the design and improvement process OLI has analyzed the data collected from student use to evaluate the effectiveness of specific learning activities and revise activities based on this analysis. In addition to analyzing the data to understand student progress in learning-domain knowledge, OLI will analyze the data to monitor student progress in developing more effective study strategies and meta-cognitive reflection and self-regulation competencies. Impact will be tracked on the target population in ALL of the evaluations. The results of studies will be documented in technical reports and publications. Faculty from grantee institutions will be invited to co-author papers as appropriate.
- General principles for web-based learning environment design will be evaluated by the OLI Design Teams. As new understanding is gained of how to apply learning science to design web-based environments, OLI course will be improved to build effective learning environments that are now under development through other grant funding. Researchers at the Pittsburgh Science of Learning Center may also introduce variations in learning activities into the learning environments to refine our understanding of how people learn, and the results of their research in these courses will be disseminated through the PSLC theory wiki and various publications.
- Course design will be evaluated against UDL rubric and against UDL assessment standards by CAST; Adoption will be examined and analyzed by SBCTC. Comparison measurements of the results of Comprehensive Infrastructure Services vis-à-vis the Plus Platform vis-à-vis Plus Co-Development services. Metrics for overall TAACCCT

impact as part of the overall evaluation plan. Indicators of success will include analytics of web traffic to the government TAACCCT repository. Through this kind of measurement and radiating “halo effect,” we seek to measure identify take-up far beyond the colleges we directly engage in this 36-month grant.

Following an S-shaped innovation curve, and keeping with the typical time trajectory for innovation design, development, diffusion and maturity, we expect the knowledge and innovation to be developed over the next 36 months in Wave 1 will accelerate the impact of Waves 2, 3 and 4 of DOL funding.

### **Conclusion**

This \$2 billion government grant is an example of open policy. Publicly funded resources should be openly licensed resources. Citizens who pay for education or research or other resources with their tax dollars should have free and open (as in legal access vis-à-vis an open license) access to what they funded. First, global open advocates should look at this government open policy as a model for what can happen in their country. Second, OPEN might be viewed as a model of how the open community can support, with our technical assistance, government projects that require their grantees to share what they build with public funds.

All of OPEN’s resources will be licensed CC BY and posted on: <http://open4us.org>

### **License and Citation**

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# Credentialing of OCW Studies by Tertiary Educational Institutions

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## Abstract

OpenCourseWare has provided new opportunities for access to tertiary academic content, and this has created a need for ways to document, assess, and credential the knowledge and skills gained. In 2011 we saw a number of developments designed to offer this recognition including Badges and Certificates. While both of these will certainly fill the need for recognition of learning, neither of these confers a degree. There are a large number of tertiary institutions throughout the world that provide Recognition of Prior Learning (aka: PLA, APL, PLAR, RPL): official credit for non-traditional learning.

A survey of Tertiary Institutions was conducted to determine the extent of credentialing possibilities for individuals who use Open Education Resources (particularly OpenCourseWare) to gain the knowledge and skills they seek. Surveys were distributed through various listservs, in newsletters, and through social networking venues. Institutions were asked to identify their current policies regarding Prior Learning Assessment and Credit by Evaluation as well as any associated costs. Additionally, schools were asked to identify the percentage of a student's overall degree/certificate program that could be accounted for through these methods. The surveys included questions regarding OpenCourseWare and ePortfolios to determine what credentialing possibilities exist for those individuals who build and submit a portfolio of learning acquired through the use of OCW. A report on the information gathered from this survey, and recommendations for further research will be presented. A comprehensive report/database will be tabulated and published as an OER so that students, who wish to do so, can plan a program of study that will allow them to obtain a credential/degree while strategically utilizing OpenCourseWare.

## Keywords

APL, PLA, RPL, PLAR, credentials, credentialing, ePortfolios, OpenCourseWare

## Introduction

In the paper titled: *OpenCourseWare, Global Access and the Right to Education: Real access or marketing ploy?* the authors state that the OpenCourseWare Consortium "has the potential to reach and educate a substantial, worldwide population of potential students" (Huijser, Bedford & Bull, 2008) While the vision of the OCW Consortium is "a world in which the desire to learn is fully met by the opportunity to do so anywhere in the world - where everyone, everywhere is able to access affordable, educationally and culturally appropriate opportunities to gain whatever knowledge or training they desire" ("About the OCW," 2012) meets very real global needs, there remains an additional need by those who utilize its resources to gain formal recognition for the learning acquired. ("Higher education in," 2000; Pope, 2011). And, it is not just learning through OCW, but learning gained through all openly accessible educational resources on the Internet.

The demand for some type of credential has spurred the development of new initiatives meant to offer recognition of this non-traditional learning. Among these are P2P, Mozilla's Badges, and MITx. None of these, however, confers a degree. While, University of the People offers degrees in Computer Science and Business Administration, it is currently not accredited. Because of this, credits earned through U of P may not be transferrable to accredited institutions. <http://www.uopeople.org/groups/accreditation> and may not be helpful for those

who wish to apply for employment that requires a degree from an accredited institution.

In 2011 OER University was launched and its first set of course offerings (prototypes) are on target for the fall of 2012. While OERU itself confers no degrees, the institutions that make up the University do. The institutions are working together to develop a program whereby students can access OER courses, for free, and gain credit through the participating institutions. [http://wikieducator.org/OER\\_university/Home](http://wikieducator.org/OER_university/Home)

While all of these initiatives are promising in one way or another, the choices for obtaining recognition of learning achieved through OCW studies towards a tertiary degree, *seem* limited if not non-existent. In October of 2011, Education Insider published an article that states “currently no credentialing system for OCW exists - so students who complete an OCW course online can earn a lot of satisfaction, but not college credit.” (Garneau, 2011). Is this accurate though?

Methods often referred to as Recognition of Prior Learning, Assessment of Prior Learning or various other similar terms, providing college credit for learning that takes place in non-traditional ways, currently do exist that. For the purposes of this paper we will use the acronym PLAR (Prior Learning Assessment & Recognition) when referring to this process. PLAR is available through numerous tertiary institutions worldwide. The types of assessments used usually take the form of a portfolio and/or examinations, and may include interviews and/or specific documentation. (Lester 2007; Joosten-Ten Brinke et al. 2008) While PLAR practices are more established in Canada, the United States, some European countries, and Australia there is growing movement in the rest of the world to implement PLAR programs and, in places where PLAR exist, to make those offerings more extensive. (Kennedy, 2007; Justice, 2007; Mayet, 2007; Hornblow, 2002) The International Review of Research in Open and Distance Learning recently published a special issue which focused exclusively on PLAR (<http://www.irrodl.org/index.php/irrodl/issue/view/43>).

Yet, many if not most of the individuals who could benefit from this option, are unaware of it and information regarding the process is often difficult to find. (Wihak, 2007; LearningCounts.org, nd) The number of credits that can be earned through the process at any particular institution, the kind of learning that will be considered, the process involved, and the transferability of earned credit vary widely and are often not clearly articulated. (Smith & Clayton, 2009; Klein-Collins, Sherman & Soares, 2010) Even less clear is whether or not PLAR would be an option for students who use OCW and OERs as a form of self-study.

### **Challenge Exams**

One method of obtaining credit for prior learning is through a process often referred to as Challenge Exams. These exams allow individuals to “test out” of courses at the institution offering this option. The exams are generally developed by faculty at the institution, and reflect what the faculty believe a student should know in order to have successfully completed the course. (Gambescia & Dagavarian, 2007) While worldwide statistics on the prevalence of this option do not appear to be available, a 2006 report on PLAR practices in the U.S. indicate that of those institutions offering PLAR, more than half offer Challenge Exams, although the prevalence does appear to be declining. (Klein-Collins, 2007) There is almost always a fee involved with this type of assessment, and if the fee is equivalent to the cost of the course, this may not be the best method for students who have used OCW studies in order to reduce the overall cost of their education.



## Standardized Tests

The most widely accepted method for obtaining PLAR credit, in the United States, is Standardized Testing. (Gambescia & Dagavarian; 2007; Klein-Collins, 2007). There are several standardized test options, recognized by the American Council on Education (ACE). While many of these tests are administered worldwide, tertiary credit is awarded for tertiary institutions in the United States, and international partnerships. The cost for these exams is relatively low, and the percentage of institutions that will accept credit from at least one type of these exams is about 85%. (Klein-Collins, 2007)

Excelsior College Examinations (ECE)

:<http://www.excelsior.edu/ecapps/exams/creditByExam.jsf?gw=1> 46 exams on such subjects as: Managerial Accounting, Organizational Behavior, and Abnormal Psychology. ECE exams are also offered for various topics in Nursing. The cost of an exam can range from \$95 - \$375 US.

College Board's College Level Examination Program (CLEP): 33 exams including Calculus, Chemistry, and Information Systems and Communications, cost is \$77 US. Available for international students interested in studying in the US

<http://clep.collegeboard.org/exam>

DSST 38 exams on such subjects as Astronomy, General Anthropology, and Technical Writing, 1200 test centers worldwide, Fee is \$80 US per exam.

<http://getcollegecredit.com/>

UExcel: approximately 10 exams, cost is \$95 US per exam. Tests available include: PHY140 Physics, MAT210 Statistics, and SOC105 Introduction to Sociology. Test centers worldwide <http://www.uexceltest.com/>

## Portfolio

The use of portfolios for PLAR is on the rise, but the process of portfolio development is often very specific to the institution, and credits earned this way are often not transferrable. However, some tertiary institutions have developed extensive articulation agreements that allow for credit transfer/acceptance. (Klein-Collins & Hain, 2009; Stenlund, 2010; Klein-Collins, Sherman & Soares, 2010)

Concerns about validity are perhaps the biggest stumbling block to acceptance of this method. And, where there are not articulation agreements, the reason credits earned through this method are often not transferrable. (Stenlund, 2010; Gambescia & Dagavarian, 2007) Documentation of learning is critical, and many times requires validation, (Stenlund, 2010; Gambescia & Dagavarian, 2007) nevertheless this is a promising option, and the introduction of Badges and various certificates may push this to the forefront of PLAR.

One very promising program for PLAR is LearningCounts. Learning Counts is an initiative of The Council for Adult & Experiential Learning that "offers a prior learning portfolio course" in which students build a comprehensive portfolio of their experiences. The portfolio is then reviewed and assessed for credit by subject area experts. Currently there are over 140 participating tertiary institutions piloting the program. (<http://www.learningcounts.org>). The institutions have agreed to accept the credit awarded through this program.

## Method

In December of 2011, a survey (<https://docs.google.com/spreadsheet/viewform?formkey=dHdRYXpvVkRWSDFqSTBJQI1zbWJlbUE6MQ#gid=0>) was created to gather information on PLAR possibilities at tertiary institutions world-wide. The survey was created by Wayne Mackintosh, Director, OER Foundation ([wayne@oerfoundation.org](mailto:wayne@oerfoundation.org)) with assistance from: Ellen Marie Murphy, Director of Online Curriculum, Center for Distance Learning, Empire



State College (SUNY) ([Ellen.Murphy@esc.edu](mailto:Ellen.Murphy@esc.edu)) and Rory McGreal, UNESCO-COL Chair for OER, Athabasca University and member of the OER Foundation Board of Directors. ([rory.mcgregal@athabascau.ca](mailto:rory.mcgregal@athabascau.ca)). The survey was distributed primarily to individuals on the OER University network. Two additional surveys (one via email, and one at [http://bit.ly/APL\\_survey](http://bit.ly/APL_survey)) were created by Ellen Marie Murphy (the author of this paper) and distributed through various listservs and newsletters including the CAEL newsletter, CAEL LinkedIn Group, EPAC listserv, and the AAEEBL listserv. Links to the various surveys were also sent via Twitter with the hashtag: #APL and #PLA, in addition to their distribution on listservs.

It should be noted that the survey located at [http://bit.ly/APL\\_survey](http://bit.ly/APL_survey) is an edited form of the survey done in collaboration with Wayne Mackintosh and Rory McGreal. This survey was not available until February of 2012. The greatest difference between the latest survey and the original is that questions regarding standardized tests were added. Spellings were changed, some questions were removed as well. Information gathered from these three surveys is the basis of this report.

Institutions were asked to identify their location, web address, and provide the name and email address of the individual completing the survey. In addition to questions regarding PLAR possibilities at the institution, questions were asked as to the type of institution and the number of students enrolled.

## Results

As of the writing of this paper, there were 23 responses to the surveys. Two were duplicates of each other (two different individuals from the same institution replied) 3 responses were incomplete and unclear. The data used in this report was gathered from the 18 remaining responses, representing 18 different institutions:

- Lifetimes & Milestones, Australia
- Otago Polytechnic, New Zealand
- University of Southern Queensland, Australia
- People's Open Access Education Initiative (Peoples-uni), UK
- Southern New Hampshire University, USA
- Athabasca University, Canada
- Thompson Rivers University, Canada
- SKN medical College, India
- Northtec, New Zealand
- Open Polytechnic of New Zealand, New Zealand
- Justice Institute of British Columbia, Canada
- SUNY Empire State College, USA
- UC Davis, USA
- Open Polytechnic, New Zealand
- University of South Africa, South Africa
- University of Wollongong, Australia
- University of Illinois Springfield, USA
- Prior Learning Centre, South Africa

As a result of the limited response, the information gathered is also limited. It should also be noted that all of the nations represented in the survey results are English speaking countries. Nevertheless, important information regarding the credentialing of OCW studies has been gained, and looks promising.

As noted in Table 1, in general, examinations are at present the most viable route for credit for individuals who wish to receive recognition. The acceptance an ePortfolio of studies completed using OCW, or any OER in general, varies greatly by country (Table 2), with institutions in the United States being the least likely to accept them. Even with those institutions that indicated they would accept a portfolio, the process for doing so would vary greatly. Will, for example, certificates of completion (like those issued via MITx) and/or Badges be accepted? In a recent email exchange on the OERU listserv, validity seemed to be a concern: “In the PLAR Department at TRU, we would be focussing on the MITx assessment process, and specifically what safeguards are in place to ensure that the student is actually the person taking the test, and doing it under supervised conditions... Without that, we would need to find some other way for the student to demonstrate learning acquired through the MITx course, in order for that learning to be recognized for credit.” (Wihak, C, personal communication, February 14, 2012) “A survey response from the Prior Learning Centre in South Africa, seems to indicate that the ePortfolio of OCW studies would be worked into the development of a larger portfolio that would then be used for PLAR credit “we see them (*OCW student*) as an RPL candidate, simply adding the theoretical knowledge to their already existing workplace experience.” (Deller, 2011)

The percentage of a degree program that can be earned via PLAR, is also a consideration when assessing the possibilities. Institutions that responded to the surveys, indicated that the least amount was 50% of the overall degree program. Several of the institutions indicated that 100% of the degree program could be earned in this manner. The cost of a degree earned in this manner, then, could depend on the method of assessment an individual chose (exams, portfolio development, or a combination of the two).

The cost for portfolio assessment varied widely. In cases where students were enrolled in the institution, there was often no cost. Some, had a per-credit fee, while others charged one fee for the entire portfolio, and others charged a per-credit fee in addition to an application fee. The highest per credit fee was approximately \$100. Several indicated that the cost of an entire portfolio assessment would be a flat fee of \$750. One indicated the fee would be approximately \$1800 for a complete qualification. Since the prices given were in different currencies, the estimates here are only approximate. Regardless of the cost, all appeared to be much less than the cost of a traditional education, with one institution stating “for a full qualification applicants pay a fee that is aligned to the equivalent of a years course fee”

Table 1. Table of Responses Regarding Source of Qualifications.

Source of qualification	Number / Percent that accepts
Challenge Exams	8 / 44% Yes 1/5% Not sure
Portfolio of learning gained from OCW or OER in general	8 / 44% Yes 5/ 27% Not sure
*Standardized tests: (CLEP, ECE, DSST, UExcel)	*1 / 100% Yes

\* Feb 2012 survey

Table 2. Table: answers to question regarding acceptance of ePortfolio of studies completed using OCW or other OER courses by Country

Country	Response
Australia	Yes: 1/3 or 33% No: 2/3 66%
Canada	Yes: 2/3 or 66% No: 1/3 or 33%
India	Not sure: 1/1 or 100%
New Zealand	Yes: 2/4 or 50% No: 2/4 or 50%
South Africa	Yes: 2/2 or 100%
United Kingdom	Yes: 1/1 or 100%
United States	Yes: 0/4 or 0% No: 1/4 or 25% Not sure: 3/4 or 75%

## Conclusion

PLAR has traditionally been given for learning gained from work experience. Do-it-yourself learning made available by the WWW through the use of OERs and in particular OCW, is fairly new, but the need for a degree is not.

To date, the response to our survey has been minimal, and therefore the current level of prior learning recognition for OCW studies cannot be determined. In view of the fact that the majority of the responses were obtained through the survey distributed primarily to the OER University network, the percentage of institutions open to providing tertiary credit for OCW studies can be supposed to be much higher than it would be in the general population. Nevertheless, the possibilities to gain credentialing towards a degree, for OCW studies, do exist and there is great hope that these possibilities will grow in number.

Because there is such variability between institutions, it is important for individuals considering this route, to identify the institution they wish to seek their degree from, and become familiar with their PLAR process as well as any costs associated, in advance of their studies. The current lack of easily accessible information regarding institutional processes, and options, remains a stumbling block. The need for a centralized, easily accessible, open database of PLAR information would be the first step in providing OCW consumers seeking credentials with the information they need to plan their routes to a degree.

At the writing of this report, both web-based surveys are currently live and there are no plans to close either survey. The results of two of the surveys are available live on the Web, and there are plans to create a searchable site that will contain comprehensive information on OCW credentialing possibilities.

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# **Developing open academic practices in research methods teaching within an HE in FE context**

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## **Abstract**

This paper reports on a SCORE teaching fellowship project focused on embedding open academic practices within social science research methods teaching. The host institution is a large, mixed economy (HE in FE) college where the majority of the HE provision is at full degree and postgraduate level. This requires effective research methods teaching at levels 4 to 7 and is an argument for making good use of the high quality research methods OER available through repositories such as Jorum Open, iTunesU, the National Centre for Research Methods and Merlot. However as the HE provision sits within a further education framework, historically there has been a strong emphasis on extended face time with students. As a result the introduction of blended and distance learning pedagogies to supplement or substitute this face time is a fairly new concept which is currently starting to take shape within the institution. This transition is in part driven by the learners' own preparedness for e-learning and their increasing expectations for such provision (OLTF, 2011).

This project has sought to develop tutors' awareness of OER for research methods teaching and evaluate the embedding of such resources in academic practice. Tutors from three different disciplines engaged in evaluating research methods OER and subsequently embedding these in teaching practice. The criteria for selection of OER for evaluation was based on including a mixture of media types as classified in the Conversational Framework (Laurillard, 2002) in order to address the need for on-going dialogue with the learner. As the evaluation of OER had a strong focus on meeting learners' needs, the Learning Object Attribute Metric (LOAM) tool (Windle et al., 2010) was further used to define criteria concerned with the level of support, feedback and self-direction which an OER provides to the learner. Finally, the conceptual categories developed by the ORIOLE project (Pegler, in press) provided a framework for understanding the factors which were likely to influence tutors' decision making in reuse and students' decision making in engaging with the resources.

Within an action research framework three research methods tutors from different disciplines engaged in evaluating 22 research methods OER. Using the criteria outlined above, each tutor completed 6 evaluative questionnaires – three for OER they would like to use in practice and three for OER which they would not consider suitable for reuse. The tutors participated in extended interviews the purpose of which was to develop an understanding of their preferences and needs where reuse of the resources in academic practice was concerned. Learning designs for embedding OER in specific modules were developed on the basis of the evaluation. These learning designs applied pattern based frameworks (LDSE, 2011, Littlejohn and Pegler, 2007, Oliver et al., 2002) to plan and structure academic practice with OER. The learning designs were trialled with students at levels 5,6, and 7 on two different programmes of study. Focus group interviews were conducted with students who used the OER in a self-directed way, beyond their face-to-face sessions.

The findings this paper reports on are concerned with understanding the role which OER have in developing e-learning within HE in FE academic practice. In addition, the capacity of OER to meet learners' needs in this context will be explored. Conclusions are drawn regarding the contribution which OER make in supporting learners and tutors in research methods teaching and learning.

## **Keywords**

Research methods, academic practice, OER, learning design, reuse, threshold concepts

## **Introduction and context of the study**

Funded by the Support Centre for Open Resources in Education (SCORE) this project aimed to explore the role of open educational resources (OER) and open educational practices more broadly in supporting the teaching and learning of research methods within several subject disciplines. The study was situated within a large, mixed economy (HE in FE) college where the majority of the HE provision is at full degree and postgraduate level, however also involves work-based learning qualifications such as Foundation Degrees.

## **Access to Higher Education**

Historically, as the HE provision at the college sits within a further education context, there has been an emphasis on extended face time with students and the introduction of blended learning and the open learner premise (McAndrew, 2010) are relatively new concepts which are currently beginning to evolve within the institution. It can be argued that the transition towards more open practices in education, where the learner is positioned in a *'wider open world of free access where the learner finds themselves'* (McAndrew, 2010: 9) and the tutor increasingly participates in the open sharing and reusing of teaching materials, is essential for learners within the institution. One of the reasons for this is that a significant proportion of the student population consists of mature students in work, who require more flexible forms of delivery. A significant and increasing part of the delivery to foundation degree learners for example, is managed through e-learning provision, including a mixture of VLE participation and personalised learning through the use of e-portfolios. As these practices are evolving and are fairly new to both staff and students the move towards open practices in teaching and learning which underlies any form of e-learning provision needs to be carefully considered and supported.

## **Challenges of research methods teaching**

A key motivator for exploring open academic practices for the project emerged from the challenging nature of research methods teaching. The institution's HE strategy reflects the ESRC and HEFCE drive towards better preparation of undergraduate students with a research methods foundation (MacInnes, 2009). The challenges in achieving effective teaching and learning in research methods have been explored in the literature as grounded both in the students' understanding and the staff's preparedness to teach both qualitative and quantitative research methods. This is even more likely to be the case where an HE in FE learning and teaching context is concerned. As outlined by HEFCE's Good practice guide on supporting HE in FE colleges, the key purpose of HE in FE is to deliver and develop higher level skills, amongst which are research and independent learning skills, particularly to learners accessing higher education through the widening participation route (HEFCE, 2009). However there is a recognition of the issues with knowledge and expertise where research skills are concerned:

*'FE staff may not be exposed on a daily basis to institutional debates on research... Partner HEIs may offer free standing modules or workshops on research methods, or could be invited to present a workshop to introduce staff to current discourse on research approaches and methodology'* (HEFCE, 2009: 29).

Within this there is a clear need identified for external knowledge and expertise as a way of enhancing practice in research methods teaching in an HE in FE context. Besides the visiting lecturer approach identified here by HEFCE, it can be argued that open practices, dialogue and sharing of practice by academic staff could play a significant and positive role in addressing these needs.

In addition to continuing professional development needs for staff and good quality provision for learners, the research methods teaching context itself lends itself well to development through open practice. Research methods teaching is complex as an area of academic practice, involving a combination of theoretical/ conceptual understanding and practical skills acquisition within the learning process. Within the institution, social science research methods are applied across disciplines as diverse as Education, Early Childhood Studies, Sports and Exercise Science, Applied Social Sciences, Psychology and Criminal Justice. The theoretical and skills knowledge base therefore is not subject specific, rather it acquires specificity through the examples, data, overview and presentation which the tutor brings to bear on the academic delivery of the subject. Therefore, the possibilities which OER offer to revise and remix content as defined by Hilton et al. (2010) are essential for allowing the tutor to firstly reuse resources containing the common core content of research methods OER available and secondly revise and remix these to provide the subject specificity necessary to engage learners. As some of the findings of this study indicate further on, the capacity of the tutor to contextualise the OER available emerges as the key role of the tutor who adopts open academic practices. This is also indicative of how the tutor role of teaching with OER is evolving away from the development of content and towards the design of the learning experience (LDSE, 2011).

A different set of challenges relating to pedagogical issues with research methods teaching face the learners. Edward and Thatcher (2004) highlight the mode of delivery and the students' ability to understand and apply theoretical concepts as two of the key challenges which learners face in their study of research methods. The issue of students' understanding and application of research methods concepts can also be explored further through Land and Meyer's definition of troublesome knowledge (2010). This theory provides an insight into the challenges which learners may be facing in learning research methods and offers possible approaches to addressing these challenges. The authors define troublesome knowledge as '*when what is to be assessed lies outside their prior knowledge and experience*' (2010: 62). In these situations students may experience '*liminal*' or '*stuck*' places (2010: 63) which they may find difficult to move beyond. It is possible to relate this definition of troublesome knowledge to the learning of research methods, which can involve complex theory and abstract procedures which are outside of the learner's immediate experience and are therefore difficult to internalise. Land and Meyer propose the need to use threshold concepts in context and to further support these with '*discursive resources*' (Land and Meyer, 2010: 70) which would act as stimuli in the process of understanding the threshold concepts. These stimuli should offer opportunities for the learner to '*think like a researcher*' and engage with the conceptual language of the discipline (2010: 71).

It is possible to see a clear role for OER in addressing the difficulties of research methods teaching if we look at this subject as a source of troublesome knowledge. Open resources online often offer a mixture of interactive, discursive and adaptive elements (Laurillard, 2002), and can thus serve as stimuli to support the understanding of threshold concepts. The requirement for situating concepts within a relevant context can be addressed through the use of real world open data, such as is accessible from the Economic and Social Data Service (ESDS, <http://www.esds.ac.uk/>). There is increasing evidence that large scale research surveys, in their search for opportunities to disseminate findings more broadly, are making data openly accessible to the HE sector for reuse in research and teaching contexts (Growing Up in Scotland, 2012).

Within this project therefore, using a combination of opportunities including open data, and interactive OER, was seen as a way to engage research methods tutors at the host institution in



developing open academic practices, and a way to support learners more fully in their mastery of research methods theory and practice.

### **Aims of the project**

Based on the context and pedagogical needs outlined in the introduction, the aims of the study involved the following:

- Raising awareness of staff of the value of OER, through actively involving staff in the evaluation and embedding of OER in academic practice
- Working towards the embedding of OER in teaching practice across several disciplines, with a focus on research methods skills and knowledge.
- Developing an understanding of the elements of the changing learning blend where OER are introduced. This includes understanding learners' needs and preparedness for OER as well as exploring the use of online and physical spaces and forms of dialogue to support the use of OER.

### **Methodology**

An action research framework was adopted within this project to reflect the change oriented nature of the project's aims. Reason discusses participatory forms of action research which aim to both '*produce knowledge and action directly useful to a group of people*' and '*...to empower people... through the process of constructing and using their own knowledge...*' (Reason, 2001: 182). As the project's aims were primarily to engage staff in open educational practices in their research methods teaching and to support them in developing approaches to embedding OER in teaching, the action research approach involving the production of knowledge and the development of academic processes which enhance ownership of this practice was highly relevant here. The author further discusses action research as collaborative and '*research with people*' (Reason, 2001). The benefits of this form of enquiry are in knowledge having a firm basis in human ways of knowing and experience. The collaborative ethos of action research was implemented within the project to support each participating tutor in enquiring into their own teaching practice and judging the value and place of OER within this – thus each participant was also a researcher themselves.

### **OER evaluation by tutors**

Three research methods tutors participated in the study from the disciplines of Teacher Education (postgraduate level), Applied Social Sciences (undergraduate) and Criminal Justice (undergraduate). Each tutor explored a range of research methods OER and chose five of those for an in-depth evaluation. The evaluation was conducted through a detailed questionnaire followed by a semi-structured interview. The questionnaire questions were derived from considerations of pedagogical effectiveness and pedagogical responsiveness of reusable learning objects identified through the Learning Object Attribute Matrix (LOAM) (Windle et al., 2010) and the motivation, technical and quality implications of reuse identified by the ORIOLE project (ORIOLE, 2012). The subsequent interviews focused on discussing in more detail the responses from the questionnaire. The LOAM tool was also useful as a way of visually mapping out the pedagogical attributes of the OER evaluated, thus adding a layer of visual analysis to the evaluation.

In order for participating tutors to be able to evaluate research methods OER a collection of existing OER was set up through Cloudworks (<http://cloudworks.ac.uk/cloud/view/5548>). Initial conversation with staff revealed that there was little prior experience of accessing OER through repositories, therefore selecting the resources under a broad 'research methods' focus and making these easily accessible for the participants, was a necessary scaffolding step. More importantly however, the evaluative questionnaires required tutors to explore aspects of OER

which were pedagogical, technical and related to quality as outlined within the ORIOLE project (ORIOLE, 2012). Thus the collection of OER for evaluation had to represent a range of resources with different levels of granularity: big significant resources and small bits of content (ORIOLE, 2012), as well as different levels of context specificity, adaptability and interactivity. The resources were therefore carefully selected to reflect this range of pedagogical and technical attributes and allow tutors to make choices which would be appropriate for their own learning contexts. The reasoning which tutors applied to these choices would be a basis for understanding barriers and enablers for adopting OER, as well as giving an insight into the needs of tutors in designing the learning experience. Tutors were instructed to select three examples of OER which they found particularly useful for their research methods teaching and two examples which they thought were interesting but which they would not use in teaching.

### **Focus group interview with students**

Following the evaluation by tutors, each tutor selected a range of OER to introduce and embed within their research methods delivery. An interview was conducted with one of the student groups exploring their perspectives and experiences of using OER as part of studying research methods. 7 students from the BA Hons Applied Social Sciences programme, studying Social Science Research at Level 5 took part in the interview.

As the specific OER used in this instance was Online QDA (<http://onlineqda.hud.ac.uk/>), there was a further focus dictated by the content and aims of the resource, which was on the extent to which the resource helped with understanding the principles of grounded theory and applying coding techniques in qualitative data analysis with NVivo.

### **Data analysis approach**

The small number of participants in the study necessitated an overall qualitative approach to the analysis. The questionnaire's multiple choice responses were not analysed in themselves as this would not have resulted in significant data. However these questionnaire responses were used to subsequently focus the semi-structured interview discussions. The qualitative interview data from tutors and the focus group interview data from students were analysed using NVivo and applying a thematic analysis approach, using hierarchical coding.

### **Research findings**

The analysis of the evaluations of OER which the three tutors carried out provided an insight into both the enablers/motivators for implementing OER in academic practice, as well as the barriers to adoption. It was clear from the evaluations that OER offer significant potential for tutors to engage in creative, open and flexible forms of delivering academic content. However existing barriers to adoption emerged, ranging from institutional and technical infrastructure, to tutors' knowledge of how to unlock the potential of open resources, and to the limitations of the OER themselves. Some of these barriers can be seen as contributing to a form of digital divide (Inglis, Ling and Joosten, 2002), characteristic of smaller HEIs such as HE providers in an FE college as is the case in this study. The following sections will discuss the key themes which emerge as significant for understanding this decision making process.

### **OER and interdisciplinary knowledge**

Some of the key advantages of OER highlighted by the tutors were in the potential of the resource to address the understanding of abstract concepts, seemingly unrelated to the discipline. Both the Sociology and the Education tutors made similar points about the way the conceptually complex knowledge of research methods can be addressed by the interdisciplinary nature of OER. The Education tutor defined interdisciplinarity as:

**Education tutor:** *Well it is whatever is around that can help us understand the case, whatever is around which can help us understand learning, whatever is around that can help us understand change and innovation ... if you look at it from more interdisciplinary point of view – you start with a problem, and say who can tell us about that problem.*

The Sociology tutor similarly made the connection with interdisciplinarity. The easy, at your fingertips access to resources online encourages learners to explore content independently. In addition, the interactive and interconnected nature of OER encourages learners to link across the disciplines, accessing external resources and making connections on their own. From the tutor's point of view the interactive nature of OERs (linking to external material) facilitates this kind of interdisciplinary thinking:

**Sociology tutor:** *...What I found pretty much with all of these that I looked at is that there are uses in other modules as well... I could see that the commentary on the BBC remake of the Zimbardo study is very useful for introduction to psychology so again we are going away from only seeing it as learning about research per se.*

This form of interdisciplinary thinking is seen by the tutor as a strategy for learners to situate their knowledge into a broader framework of related subject knowledge. This strategy could provide support with some of the conceptual difficulty which learners experience with research methods as a subject of study. According to Meyer and Land's theory of threshold concepts (2005), in order for the learner to move beyond liminal places and internalise troublesome knowledge, their learning needs to be contextualised and supported by stimulating resources. The hyperlinking which OER provide to other related subjects, resources and more familiar examples, can be seen as the necessary contextualising and stimulus mechanism. It is clear that this kind of interdisciplinary learning is best supported by resources which are live, and continuously updated – a key characteristic of online resources.

The tutors' evaluation here suggests that OER which provide visual, narrative or interdisciplinary context are most likely to be successful for the teaching of research methods. OER have potential to address the conceptually difficult nature of the subject and contextualise this, thus supporting cognition in areas where the learner may encounter troublesome knowledge.

### **The tutor's role in the interface with OER**

The introduction of OER creates certain tensions with regards to the teacher's role in the teaching and learning context. While interactive resources provide engagement on the level of introducing sound, moving image, interactive feedback digitally, there is an important interpersonal level of teaching and learning which a good learning experience should provide. Njenga and Fourie (2010) argue that human contact in teaching and learning plays an important role in the knowledge construction process which should not be undermined by the technological push. The authors further argue that enthusiasm for e-learning can blur the boundaries between *information* and *knowledge*, erroneously presenting limitless and immediate access to information as access to knowledge. This makes it necessary to consider whether OER alone provide access to knowledge. The evaluations with staff highlighted their stance: the process of knowledge creation, with or without OER, requires significant tutor's input:

**Education tutor:** *These are fantastic resources. The clever bit surrounds how you will actually use them and integrate them into your teaching. That also depends on the nature of the open*

resource as well. Some are more flexible than others, some you will have to do more background preparation and some after-work. Others are kind of almost freestanding... all have that reasonable degree of flexibility but they all need to have some prefacing and some follow-ups.

This need to 'preface' the resource use and to guide the learning interactions was evident in the Criminology tutor's point of view as well:

**Criminology tutor:** *'would learners be able to use [the OER] autonomously' – undecided because obviously if they sit for half an hour then they are going to find things but I would have to guide them as to why I need them to read or listen to, things like this. So it would have to have some guidance.*

The tutor's role was also discussed in the context of reusing the resource over more than one level of study:

**Sociology tutor:** *I could see that being used as not the initial lecture on questionnaires but a development of what they have done so far. So rather than the students only having one session on questionnaires I could see it better that they could have an initial session and then tweaking and improving. As that particular one says it is about improving the use of questionnaires. Which might be a skill that needs to be spread across three years – if they are choosing questionnaire for their dissertation then they might want to revisit to improve on their design of questionnaires. So I have placed this as being both for SSR2 and for SSR3 the Dissertation as an update.*

It is evident that all three tutors identified a definite need to contextualise the resources for effective learning and teaching. The tutor's role articulated in the responses emerges as one of introducing the knowledge context before directing learners to explore OER on their own. In addition, where the OER were envisaged as working across several levels of study, as in the Sociology tutor's example, the tutor's role would be to embed the use of the resource in her delivery in different ways depending on the learning objectives concerned.

### **OER and the development of the tutor's own academic practice**

The role of the tutor in reusing OER has to be seen as professional academic practice. In this context of professional practice and development, the possibility that the open resource itself could act as inspirational material and a trigger to rethink delivery was discussed. OER here were seen as a form of creative spark which opens up opportunities for the tutor to think about further and alternative ideas of how to introduce the subject to learners. However this discussion was in the context of external pressures which limit such creativity:

**Education tutor:** *'I mean what I could quite see there is that, if I had the time and I was feeling positive and creative, not wrecked and worried about where that stuff in the room's gone [missing assignments], you could create scenarios – like 'you have been given the task to conduct action research into this...how do you go about doing it. These are the features, these are the people involved, these are the problems and whatever and then something like that would be great to link with it. What it does is that it kicks off a lot of creative ideas and follow-ups.'*

This type of concern to some extent places a barrier to the creative benefits of OER. They encourage creativity however in order for a person to be creative they need to also be relaxed and free from external pressures (Cropley, 2001). To a certain extent this could explain some

of the reluctance in the uptake of OER - where teaching staff feel pressure, creativity takes second place. On the negative side, this could also mean that it is more likely for staff to utilise OER resources which are quick and easy to reuse, offering time saving potential rather than engaging in reuse which offers potential for rethinking and innovating curricula.

Other concerns included the fear that '*A less experienced tutor may over-rely on these resources*' (Education tutor). Particularly where OER are seen as a time-saving mechanism, this could be seen by a less experienced tutor as a way of avoiding the authoring of the teaching and learning content and therefore missing the benefits of developing learning experiences for the students.

### ***Towards a blended learning approach to delivering research methods with OER***

The tutors' exploration of OER inevitably raised questions regarding teaching and learning strategy. As online resources their adoption would necessarily mean engaging in blended learning forms of delivery. As already mentioned in the introduction, several factors need to be taken into account when considering blended learning approaches to delivery at the host institution. The first of these factors concerns de-emphasising face time as the only legitimate form of delivery and accepting that legitimate learning, collaboration and discussion can happen online. The second issue concerns the student body in an HE in FE context, which comprises a large proportion of mature learners with significant work commitments who require more flexible forms of delivery. The third issue is related to staff preparedness to adopt e-learning as part of their provision.

From the tutors' comments it was evident that they would actively consider the possibilities to support learners' self-directed use of OER with discursive/communicative e-learning tools. However it was also evident that at present the practices of utilising online discussion boards for example were not developed:

**Researcher:** *Have you thought about combining for example them watching a video and then having a discussion online? Or do you not use those very much [online forums].*

**Criminology tutor:** *We are at a point now with our degree where we are looking to do these kinds of things – we have not had them before where we have discussion boards and forums, we haven't got any forums, but we are at a point now where we have built our foundations and we are looking at forums – so definitely if I provide them with MP4s to watch and then provide a forum for those – that's the way forward now.*

The Criminology tutor's response here expresses an intention to develop e-learning academic practice in the future, rather than commenting on embedded e-learning in practice. It was evident that while this practice was currently underdeveloped, tutors were prepared to actively explore discursive forms of e-learning to support learners' the use of OER. OER can therefore be seen as the vehicle for developing blended learning approaches in academic practice.

In terms of teaching strategy, the Criminology and Sociology tutors outlined specific ways in which they could see OER being used. One example was the video material from iTunesU which both of these tutors showed enthusiasm for. Both tutors were keen to see this type of resource used as revision material by learners and as stimulus material which would in turn contribute to collaborative discussion. The fact that tutors believed this material was easy enough for learners to navigate meant that they were equally supportive of the iTunesU resources being used in a self-directed way with discussion online, as they were with using the video material as part of a taught session with seminar or workshop activities providing the discursive layer of the interactions. The use of iTunesU was therefore outlined within face to

face lectures, individual, self-directed exploration and collaborative discussion.

However, despite the enthusiasm for using iTunesU on the side of tutors, there are significant barriers to its use in the institutional context. These barriers are of an IT infrastructure nature and effectively make the use of these resources impossible within the institution. The response of the Computer services team with regards to using iTunesU on campus was the following:

*'iTunes cannot be installed as our infrastructure is not currently enabled to support the technology iTunes requires i.e. Firewall issues and Compromising network security.'*

The teaching strategies articulated by the tutors above involve an essential element of working with the resource on campus and being able to signpost learners to the resource through the institutional VLE. As these elements are inaccessible on campus, due to the limits in the capacity of the IT infrastructure in a relatively small HE provider, the connecting role which the tutor needs to perform in introducing, 'prefacing', contextualising the resource cannot be performed. Thus the relatively low level of openness of the iTunesU service creates a form of digital divide for smaller institutions, such as those in an HE in FE context.

Based on the tutors' responses regarding possible teaching strategies with OER, the use of open resources and open data for research methods teaching and learning was piloted on several modules including:

- BA Early Childhood Studies, year 2, Research Methods module
- BA Applied Social Science, year 2, Social Science Research 2
- MA Education Innovation and Enterprise

The section below outlines the experiences of students on the BA Applied Social Science programme of using a specific OER – Online QDA (University of Huddersfield), as part of their studies on social Science Research.

### **Using OER with Sociology students to support learning the principles of Grounded Theory and applying its coding procedures with NVivo**

Online QDA is a large open educational resource with a focus on qualitative research methods and methodologies. It combines a range of media (video lectures, interactive exercises) to convey the nature of qualitative research and encompasses both explanations and examples of how broad methodologies work as well as providing an overview and practical interactive exercises on the application of different coding procedures. The resource further covers the use of NVivo to apply qualitative data analysis techniques – this is achieved through a series of step by step video guides on the application of these techniques.

It was considered appropriate to introduce Online QDA as part of the delivery of the Social Science research module for level 5 (second year undergraduate) Social Sciences learners. Many of the topics covered in the module pertaining to qualitative data were also covered in the OER. In addition, the module involved introduction to NVivo and an analysis task with NVivo was built into the learners' assessment. The open resource was therefore considered a useful addition to the core provision on the module.

Based on Oliver et al.'s framework for describing learning designs (Oliver, Harper, Hedberg, Wills, Agostinho, 2002) and Littlejohn and Pegler's LD\_Lite planning tool (2007), a pattern, lesson plan and temporal sequence for a rule based design were developed to capture the approach taken to planning the delivery with the addition of OER. The pattern tool outlines the

‘design problem’ in the delivery of this module. The temporal sequence represents the tasks (rectangles), resources (triangles) and supports (circles) necessary over the course of the module delivery.

The key issue which the learning and teaching approach was aiming to address was to provide support with conceptually difficult material in research methods, as well as to support learners’ development of skills in applying procedural knowledge such as applying coding procedures to the analysis of data. The use of the OER was seen as providing the necessary stimulus material for learners, and acting as revision material, easily accessible to the learners.

The temporal sequence (Figure 1) illustrates how provision was organised as consecutive iterations of lecture type or workshop type delivery, followed by self-directed exploration by the learner, supported by the Online QDA OER. It was important to explore whether learners were able to utilise the OER in a way which was pedagogically effective.

### **Learners’ experiences**

Learners discussed the challenges of studying research methods. The social sciences 2nd year students talked about the transition which they were making from studying only quantitative methods in year 1 to studying qualitative methods in year 2. Some authors highlight that the division between qualitative and quantitative methodologies is ‘superficial’ (MacInness, 2009) which would suggest the need to introduce both types of methodologies concurrently.

The combination of theoretical and technical concepts which the learners have to acquire is another challenge in research methods teaching. Having to understand the theoretical concepts around Grounded theory and the procedural techniques of applying coding, as well as the technical interface of NVivo as a tool for analysis, introduces some complex challenges for these learners.

The introduction of the OER into their learning resource provision brought several advantages which students articulated and which could to some extent be seen as addressing the difficulties articulated by the learners.

One of the advantages which learners highlighted with using video material from the QDA website was the interactivity of the resource - the ability to pause, rewind, take notes at their own pace - this kind of flexibility of the interactions, of the pace of learning and the ability to take control over the learning interactions was something which learners valued:

***Student 4 Female:** I watched some of the videos on QDA. It was useful because you could pause it if you didn’t catch it and make notes; sometimes in a lecture it is really fast and you can’t obviously pause it, but when you are watching a video you can pause it and make notes and carry on to your own pace rather than everyone else’s. So I thought that was quite useful. When I watched on QDA I could make my notes how I wanted to make them.*

The ability to control the medium and to work at their own pace, seems to contribute to self-directed learning practice. Key elements to notice in the learning design here are the fact that the resource content was introduced by the tutor in class, thus helping to contextualise the self-directed learning interactions.

The students also reacted positively to the interactive exercises on grounded theory coding:

***Researcher:** Did you do some of the interactive coding exercises – where you had to assign the code word and ...*

***Several:** Yes.*



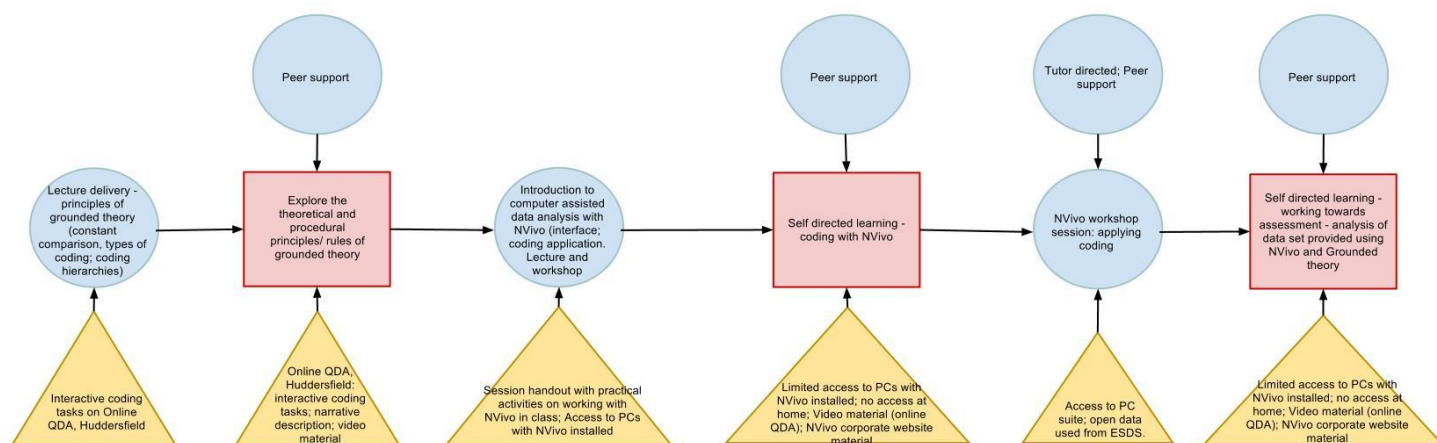
**Researcher:** How did you feel about those?

**Student 1 Female:** When we started doing the NVivo I remember going back to it and thinking 'oh it's just as simple as that then – literally just copying words and giving it a title.

The interactive exercises provided learners with the opportunity to practice the procedural layer of grounded theory. However, care needs to be taken not to oversimplify or take the procedural exercises out of context. The danger with this is that the students may learn how to assign codes, however may not have actually understood the key concepts such as constant comparison or stages of open, axial and selective coding. As Meyer and Land identify (2005), learning of troublesome knowledge requires some form of transformation in the learner. Unless this transformation takes place, the learner may be unable to acquire knowledge and could instead engage in a form of 'mimicry' or ritualistic/surface learning (Meyer and Land, 2005: 382). This often happens when in an attempt to introduce the concept in an accessible way, teachers, or the resource itself, simplify the concept. While the OER discussed here introduces concepts in significant depth, as well as providing simplified exercises for learners to practice procedures, the interactive and non-linear nature of the resource means that learners could choose to view procedural content without having accessed or understood theoretical content first. This poses certain challenges to knowledge construction which need to be carefully considered.

Attitudes towards the use of OER in general were further explored within the focus group interview. Some of these attitudes can be related to the 'millennials' debate which places mature learners at a disadvantage where learning and teaching which utilises the internet is concerned (Oblinger, 2005). One learner described herself as a 'book person' identifying a preference for hard copy materials rather than online resources. The ingrained habits of working with hard copy seem to have an influence on this learner's readiness to explore online resources. The fact that the student population of the host institution includes a large proportion of mature learners makes it more likely that there will be digital literacy skills which will need to be addressed in order to prepare learners adequately for the range of resources they would need to access as part of their learning. The digital divide which these learners may experience needs to be addressed on the module and study skills level, as well as on a broader institutional level, particularly where barriers to access are concerned, as the example of iTunesU illustrates.

**Temporal sequence for a rule based design for introducing Grounded theory and computer assisted qualitative data analysis in Social Science Research (Level 5), based on Oliver et al., 2002**





However it also needs to be considered that the learning experience varies significantly depending on individual learning needs and preparedness for working online. One of the learners highlighted that she has a better chance of understanding the material if she has searched and identified this herself. Searching for her own resources online helped the sense-making process and allowed the learner to internalise the concepts searched for and the information found better:

*Student 6 female: I think if you go on and find your own resources you understand it in a way which is better for you... we get these booklets and I don't tend to read them because it is too much and if I was to find it myself I would find bits that are relevant to what we are doing rather than reading it all to find relevant bits I can see it straight away.*

This point of view highlights the advantages of independent research to meaning making and narrative construction by the learner. Independent research is seen by the learner as fundamental to the process of internalising learning. This highlights a clear need for OER which are searchable by learners for use in a self-directed way. This example also suggests that the self-directed learning proportion of the learning design should incorporate searching for OER by learners, in addition to using the OER specified by the tutor.

## **Conclusions**

This evaluative action research study provided an insight into processes of developing open academic practices to address research methods teaching within the HE provision of a mixed economy college. It provided an opportunity for tutors to engage in reflexive practice through exploring open educational resources. In addition, the embedding of some of these resources in academic practice was explored on the level of learning design as well as from the point of view of the student experience.

The findings of the study indicate that OER have significant potential to enhance provision for research methods teaching and learning. These resources encourage interdisciplinary ways of thinking about the subject which in turn support the learner in understanding threshold concepts as described by Meyer and Land (2005).

OER can also be a basis for developing blended learning practices which provide a discursive framework of support for the students – another element which supports the acquisition of troublesome knowledge. It was evident from learners' comments that they found the interactive nature of OER to be supportive of their pace of learning and therefore of self-directed learning in general. In this context OER can be seen as a driver for blended learning approaches and the open learner premise (McAndrew, 2010).

The findings further highlighted that the role of the tutor in embedding OER as part of the learning experience for students is significant. In their own articulation of their role in open academic practice, tutors described the need to preface, contextualise and embed the OER within the module content, one example of which is illustrated in the temporal sequence in Figure 1. The resource is seen as one of a range of support mechanisms within the learning sequence, and its uses vary from tutor led, to learner directed forms of engagement. The key issue of using the OER outside of this guided context, in research methods teaching in particular, is that it could lead to use which produces ritualistic learning rather than authentic knowledge construction.

Finally, the barriers to effective reuse of OER were highlighted. Within an HE in FE context these included the digital divides created by technological infrastructure and digital literacy

skills of learners. These barriers further included the impact of external pressures on staff time which in turn could result in limited ways of reuse constituting time saving measures, rather than reuse aiming to enhance creative teaching practice.

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## **Developing Students as Content Scavengers**

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Paper not submitted.

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# **Digital Futures in Teacher Education: Exploring the opportunities and challenges of creative uses of digital literacy in schools**

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## **Abstract**

This paper draws on early findings of a project "Digital Futures in Teacher Education" (DeFT) currently being undertaken as part of the third phase of the JISC (Joint Information Systems Committee) UK Open Educational Resources (OER) programme. It discusses issues emerging in the context of attempts to embed OER practice within teacher education sector. One of the key aims of the DeFT project is to develop guidance on practice in teaching and learning in the school sector involving digital literacy (occasionally referred to in the paper as DL). Accordingly, the project team, based at Sheffield Hallam and University of Sheffield, are working towards release of OERs, in the form of an Open Textbook (Connexions, 2009), which address the opportunities and challenges of creative and innovative uses of digital literacy in the context of the school and teacher education sectors. The team are also working with teachers in primary and secondary schools in South Yorkshire to develop case studies examining digital practices in schools, focusing on the use of mobile devices and Web2.0 applications for enhancing the digital literacy skills of pupils. Finally, the project also incorporates the involvement of Higher Education lecturers and students and supporting them in designing OER which will support effective practice with digital literacy for teachers at all stages of their careers.

## **Keywords**

Open Educational Resources, school sector, teacher education, digital literacy

## **Introduction: Context of the UKOER programme**

To start with, this paper arises in the context of the UK-wide Open Educational Resources programme, currently in its third year, which was launched in April 2009 as collaboration between the Higher Education Academy and JISC, with funds provided by the Higher Education Funding Council for England (HEFCE). This funding enabled UK-based Higher Education Institutions to explore cultural, technical and pedagogical issues involved in the OER development, discovery and use (JISC, 2008). This paper adopts the definition of OERs offered in the context of the programme, where they have been described as:

*...teaching and learning materials (...) freely available online for everyone to use, whether you are an instructor, student or self-learner (...) [these] resources [are] contained in digital media collections from around the world (JISC/HEA, 2010).*

The key element of OERs is the fact that they encompass a variety of teaching resources which are free at point of access and that they can be re-used by anyone regardless of whether they are affiliated with a formal educational institution or not. Importantly, OERs are highly customisable and allow for re-use and sharing with few copyright restrictions given that they either reside in the public domain or have been released under a license (most commonly a Creative Commons [CC] license) that permits their free use or repurposing by others (Atkins et al., 2007:4). Mackintosh (2011) has broadened this definition to incorporate three interrelated dimensions: educational values (in terms of barrier-free access to the resources), pedagogical utility (anyone accessing OERs should be able to reuse, revise, remix and redistribute the resources) and technology enablers (i.e. OERs should be in a format which ensures that they are "meaningfully" editable). This means that potential (re)users of

OERs are positioned not as mere consumers but as active participants in the process of creating and sharing the resources (Tosato and Bodi, 2012).

Whilst there have been two phases of OER funding for HE to date, there remains little coordinated development of resources for the school sector. A notable exception has been the BECTA-funded (British Educational Communications and Technology Agency) project "Repurpose, Create, Share" whose aim was to create and share digital resources across participating secondary schools and the National Education Network (Hemsley, 2008). Since the demise of BECTA in 2010 there has been less support in this area. What remain are the regional networks that have formed around broadband consortia to work with local authorities to provide resources, advice and continuing professional development, and the pockets of excellent practice that arise from the school partnerships that have emerged from the relationship between HEI training providers and the school sector.

Furthermore, existing research on OERs in the UK context engages mostly on issues of relevance to the higher education sector, with a number of studies examining the use of OER and their impact on academic practice as well as barriers and enablers to OER uptake (Browne et al., 2010; Nikoi et al., 2011; Rolfe, 2012). In terms of issues of relevance to the school sector, most existing research focuses on the implementation of OERs in developing countries. This includes initiatives such as The High School BLOSSOMS (Blended Learning Open Source Science or Math Studies Initiative) project in the Middle East Region (Larson and Murray, 2008) which examined low-tech solutions to overcoming barriers to accessing OERs. The Teacher Education in sub-Saharan Africa project (TESSA) undertaken by Open University examined issues involved in supporting user communities to harness and integrate OERs for their own systems and cultures (Thakrar et al., 2009, Wolfenden et al. 2010).

### **Context: Digital literacy frameworks**

JISC have developed an anatomized framework for DL that looks at access, skills and practices, and the contexts in which these practices exist, in for example the personal/social and learning contexts and communities (JISC, 2011). An initial mapping of the DeFT case studies to this framework highlights the value of this framework for the application of DL technologies to learning activities, but does not allow for the meanings that are made within and through these practices (Gillen and Barton, 2011). There is a pressing need for teachers to engage with digital literacy throughout education, and increasingly the skills and experience that learners (and their teachers) have or need is changing and the baseline is being raised. However, at the same time, the increasing possibilities offered by new technologies and the diversity of digital practices associated with them have prompted much debate around the growing gulf between literacy provision in schools and the rapidly changing digital literacies in learners' lives (Burnett, 2011). Burnett brings up a number of arguments which attempt to account for this disconnect, such as for instance inadequate access to equipment and competing pressures relating to print literacy. Yet another oft-cited argument is that pointing to an existence of a stark divide between teachers and pupils in terms of their competence and confidence levels, where the pupils are portrayed as "digital natives" (Prensky, 2001), who have been exposed to new technologies from a very young age. However, a number of studies critique this proposition and suggest a more nuanced understanding of divisions between individuals' experience of digital technologies, where levels of access and competence/confidence are determined by factors such as societal position, race, and gender, rather than age and educational status (Selwyn 2004; Hargittai, 2010). A further body of research, involving a large scale investigation in Australian Schools,

questions if a digital divide even exists or if stakeholders are overreacting tremendously (Bennett et al., 2008).

### **Digital literacy and the ICT curriculum**

Importantly, the project takes into account current debates focusing on issues of ICT in the curriculum and their relationship to digital literacy issues. As Merchant argues, there are a number of competing discourses in the UK which see ICT either as a set of skills (the National Curriculum for ICT, QCA, 2000); as a tool or vehicle for learning (DfES, 2004) or as transformative influence which has an impact on all aspects of schooling (DfES, 2005) (Merchant, 2007). These discourses are reflected perhaps most vividly in the recent Royal Society report which argues that the current delivery of ICT curriculum is highly unsatisfactory and uninspiring for the pupils and focuses on the development of basic skills while excluding the more advanced skills that could be gained through exposure of pupils to Computing Science (The Royal Society, 2012). Interestingly, in that context, digital literacy is defined as "the general ability to use computers" and a set of skills such as the ability to use word processors or database software, with no reference being made to the socio-cultural aspects of digital literacy practices. The authors of this paper view digital literacy as a continuum between the purely social and the purely technological in which they engage with the concept not just as a set of skills but also as a 'social practice'. This practice exists 'in the relations between people, within groups and communities, rather than as a set of properties residing in individuals', where the focus is on 'what people do with literacy' (Barton and Hamilton 1998, 7–8). The project, therefore, considers digital literacy to be a blend of ICT, media and information skills and knowledge situated within academic practice contexts while influenced by a wide range of techno-social practices involving communication, collaboration and participation in networks (JISC, 2011). The project remains unclear at this point as to the place of creativity in digital literacy, but is mindful of how Bloom's revised taxonomy might provide a useful focus on actions, processes and learning behaviours associated with Web2.0 technology (Churches, 2009), for example.

Furthermore, the authors of the paper align themselves more closely with frameworks which move from the singular 'literacy' to the plural 'literacies' which emphasise the sheer diversity of existing accounts of digital literacy (Lankshear and Knobel, 2008). In that context, our engagement with the narratives which have arisen in the context of the project focuses on "the constantly changing practices through which people make traceable meanings using digital technologies" (Gillen and Barton, 2011).

The next section will engage with the data collected in the context of the project so far and examines meanings and perspectives on digital literacies as expressed by project participants, including teachers in participating schools as well as trainee teachers enrolled on PGCE programmes. The material we are drawing upon in this section comes from interactions with teachers during project meetings as well as two focus groups undertaken with groups of PGCE students from participating universities. All of the meetings and focus groups were recorded, with the recordings transcribed by the project officer. The following sections will also draw on feedback from the evaluator who acts as a critical friend to the project throughout its formative stages.

### **Understandings of digital literacy**

While the analysis will draw upon frameworks discussed earlier, the authors are keen to stress that they treat these frameworks as a proposition and a basis of opening up the discussion, rather than attempting to apply rigid or prescriptive understandings to the stories of project participants. This is of key importance given our methodology which is underlined

by a reflexive approach, where OERs are seen as a tool to elicit the more tacit, taken for granted elements of pedagogical practice with an emphasis on examining practices with/through literacies. The authors will argue that the accounts of participants reflect the tension between understandings of DL which point to DL as a skillset and focus issues of technical competence as opposed to understandings which focus more on socio-cultural practices and in particular the communication aspect.

That tension was reflected in the question posed by one of the teachers during the second project meeting where she was reflecting on how her understanding of DL shifted from when she first got involved with the project:

*When I first came to the project I did not know what you meant: knowing how to use things, or how to analyse a film...it's different isn't it? What we need to have on the product that we are going to make is a sort of definition of what we see as digital literacy.*

The quote illustrates the multi-faceted aspects of digital literacies and the process of meaning-making where the teachers participating in the project are constantly re-evaluating their understandings of DL both for themselves and other actors involved in the project.

### **DL as a practice focusing on communication**

A number of the teachers were keen to point out what they saw as a positive aspect of engaging with digital literacies in their teaching practice. In particular, they commented on ways in enhancing the digital literacy skills of their pupils led to improved communication skills. For instance, one of the teachers argued that through blogging, her pupils had a chance to learn how to write collaboratively for a target audience, thus becoming active producers of content rather than passive consumers. The same teacher commented on how blogging helped the classroom walls to become 'more porous', enabling children to engage with the outside world. Other teachers brought up ways in which enhancing pupils' digital literacy skills helped them overcome communication difficulties they might have been struggling with. For instance, one of the teachers introduced the concept of "stealth reading and writing" where through the process of recording short movies pupils who normally struggled to express themselves were equipped with the tools to present a coherent story. This aspect of DL practices was also picked up by the project evaluator who in her notes after the meeting commented:

*I gained a terrific sense of new opportunities DLs now offering to the classroom incl[uding] authentic audience, remix, producing where used to be only consumers; endeavours to enhance students' criticality e.g. re commercialism.*

At the same time, issues stemming from the notion of digital literacy as a set of technical competencies/capabilities constituted a recurrent thread in the accounts of both the teachers and the PGCE students. Interestingly, in that context, the accounts of project participants shifted from emphasis on the positive aspects of DL (as discussed above) to the "darker side" of DL, where the underlying theme was that of barriers and challenges experienced in their teaching practice.



### **Understandings of DL: a "theory of barriers"**

Both teachers and PGCE students mentioned numerous barriers they experienced in the school setting in terms of their access to equipment and software as well as Web2.0 applications. A number of teachers mentioned very strong filters on social networking services in schools which they felt limited their options in terms of offering their pupils a more interactive learning experience. Other teachers felt quite frustrated about the seemingly random ways in which the filters operated, for instance one of the teachers mentioned that it was possible to use the Wordpress platform on school computers and so the pupils could blog, however some of the elements of the blogs would be blocked by the school software and so elements of the blogging platform were inaccessible in the classroom. The issue of e-safeguarding/e-safety seemed quite emotive, with one of the teachers speaking about the "culture of fear" in his school where he compared the school's approach to "teaching road safety and never letting the child out".

The design of the case studies, as accounts of practice with digital literacy, reflected some of these barriers as well. For instance, one of the teachers who wanted to focus on the use of QR codes for educational purposes mentioned that he would ideally like to be able to rely on smartphones due to their connectivity features; however mobile devices were not permitted in schools. Furthermore, even if he managed to obtain permission for students to use their mobile phones in the classroom, they would be prevented from accessing the school's Wi-Fi network. At the same time, it has to be noted that reliance on student devices could be problematic given that it cannot be assumed all students had access to smartphones. Instead, he decided to opt to use iPod touches provided by the project team.

### **DL and the curriculum**

A number of teachers and PGCE students also commented on the time-consuming nature of introducing more creative/advanced aspects of digital literacy skills and practices within the curriculum. For instance, one of the PGCE students, when talking about the possibilities of exploring digital literacy issues with her pupils, touched upon the clash between the desire to engage in more creative learning process and the need to "teach for an exam":

*In terms of teaching and digital literacy the ultimate question we constantly need to deal with is - is this going to help the students when they get to an exam? Because what I would like to see happening is the fostering of a community, personal growth etc. but most of the time it is about having to teach "for an exam".*

Teachers had similar concerns when talking about the effort involved in putting together the case studies for the project. They argued it was often difficult to justify taking up two to three weeks of pupils' time where the end result would seem disproportionate to the time and effort invested in producing for instance a one-minute video. While it could be argued that there are a number of other classroom activities which are equally time consuming where the end result is not always very representative of the preparatory work needed, nevertheless, this points to tensions and competing pressures related to emphasis on print literacy within the curriculum (Burnett, 2011).

### **DL and the tensions of sharing resources**

Furthermore, some teachers commented on the tensions of producing polished resources, such as the above-mentioned short video, which emphasised the end result rather than the process and related that discussion to some concerns they had in terms of releasing their own teaching resources and exposing their teaching practice. While most teachers argued they appreciated engaging with accounts of pedagogical practice which were not perfect but

showcased challenges and problems encountered by other practitioners; they were also very reluctant to produce accounts which revealed their own struggles with technology as that could put them in a very vulnerable position. Similarly, on the one hand, the PGCE students were keen to stress that they saw the process of sharing resources as an essential requirement of their chosen profession, as one of the students put it, "you have to be sharing with the kids anyway all the time". On the other hand, when contemplating the possibility of releasing their own resources online so that they could be shared openly with others, the students said they would be very careful and would only consider sharing materials that were of sufficiently high quality. For instance, a number of students were quite adamant they would not want to share their lesson plans so as not to reveal that they "had no clue what they were doing". Arguably, the tension between the wish to showcase "polished performance" and the need to engage with accounts of "real-life" practice has implication for sharing resources and releasing them openly and will be explored further as the project progresses.

### **Understanding DL: Stories of a digital divide**

Other barriers related to teachers' confidence in their own level of digital literacy and in particular their ability to "keep up" with the new tools and modes of learning and in particular with the increasing technical competence on the part of their pupils. One of the teachers argued that "what is new and exciting one day is old hat the next" and worried that her case study might potentially be out of date before it was even finalised. The literature on the place of professional development in the use of ICT in schools points to a complex set of individual orientations to the use of technology as a tool for teaching (Pountney, 2003). The feeling of struggling to keep up with the pupils was particularly prominent in the accounts of the PGCE students who saw their pupils as much more capable than themselves. Some went as far as to claim that they felt powerless and argued that they were witnessing an inversion of the power relationship where now it was the pupils guiding them, rather than the other way round. Interestingly, the PGCE students drew very heavily on the rhetoric of "digital natives" and positioned themselves as belonging to a generation which grew up without immersion in digital technologies or access to smartphones. As one of the students quite nostalgically commented,

*My pupils were shocked to discover that I didn't have a mobile phone as a teenager and when you arranged to meet with your mates you just agreed on a meeting time and point and then waited. You would actually talk to each other, you know, rather than keep texting.*

Another student mentioned that her pupils were equally fascinated by her account of "life before Google". At the same time, this account of a seemingly deep technological divide was quite striking, given that the PGCE students taking part in focus groups were predominantly women in their early-to-mid-twenties. At the time of the recording, they were on a placement in a secondary school where they worked with A-level pupils and so in reality, they would only be 4-5 years younger than their pupils, yet they maintained that their experiences were drastically different.

At the same time, both the teachers and the PGCE students, while perhaps at times feeling alienated from and threatened by their pupils, argued that often their students' engagement with technology was often quite superficial and so as teachers, their role was to offer guidance and signposting.

## New avenues for investigating DL

It is becoming clear that methodologies needed to investigate DL include reflexive accounts and reflections in action and this project will continue to explore this. This takes into account the starting points for digital literacy outlined above, but will continue to explore the ways in which understandings around DL are expressed and shared. This builds on current frameworks but also seeks to identify where the accounts of DL are incomplete or only partially realised in school contexts. Within this is the need to re-examine DL in the context of the debate around ICT in the curriculum and the removal of the programmes of study, in order that meanings about what remains, and what is starting to emerge can be made.

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# **Disciplinary and Institutional Perspectives on Open Educational Practice in Art, Design and Media Studies: Opportunities and Challenges**

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## **Keywords**

Open Educational Resources, Open Educational Practices, Social Media, Rich Media, Archives, Pedagogy, Art, Design, Repository, Copyright, Intellectual Property Rights, OER, ALTO, ALTO UK, Process.Arts, SP-ARK

## **Abstract**

This paper features reflective accounts from teams at two UK universities who are engaged in open education projects supported by national agencies (JISC and the HEA). Art, Design and Media (ADM) studies, by their nature, often feature an emphasis on practical studio and workshop based activities, with a pedagogic culture marked by an emphasis on mentoring, apprenticeship and peer support. In some ways the teaching of ADM subjects can be seen to represent the epitome of the traditional campus ‘walled garden’ and face-to-face model of teaching. In many of these subject areas there can be a shortage of didactic learning and teaching materials, representing a challenge for engagement with open educational practice (the sharing and use of open educational resources) in relation to the production and sharing of open educational resources.

Open Educational practices also present opportunities for higher education teachers in these disciplines. The contingent and provisional nature of knowledge in creative practice disciplines and the high value placed on dialogue, aligns well with the multiple perspectives and approaches afforded by open educational practices. This orientation towards practice can take advantage of the potential for sharing and co-creating skills-based resources. Similarly, those disciplines where consideration of audience for creative cultural production practices is key can also find opportunities. This paper proposes that these characteristics of the disciplinary cultures in ADM subjects provide a good natural fit with open educational practices and that by creating online environments that facilitate the sharing of practice and process lecturers will find the transition to ‘teaching in public’ less formidable.

Drawing on the findings of Practising Open Education, ALTO (Arts Learning and Teaching Online), ALTO UK, and case study examples from two SCORE Fellowships (Support Centre for Open Resources in Education), this paper considers how the broader online ecology generally and open educational practice specifically are impacting on teachers and teaching practices in ADM subjects. Practical examples will be provided to illustrate the points made in the presentation, including emerging findings from a pilot exercise to provide an online collaborative space to support lecturers working in Art, Design and Media (ADM) studies subjects.

## **Introduction**

This paper features reflective accounts from teams at two UK universities who are engaged in open education projects supported by national agencies (JISC and the HEA) in the disciplinary fields of art, design and media. Drawing on the findings of Practising Open Education (Brighton), ALTO (Arts Learning and Teaching Online) and ALTO UK (University of the Arts London), we first consider the distinct challenges and opportunities

for individuals, departments and institutions developing open educational practices (the sharing and use of open educational resources) in the context of ‘creative’ practice-based higher education.

Secondly we reflect on ways that the broader online ecology generally, and open educational practice specifically, are impacting on teachers and teaching practices in these distinct disciplinary areas. This section provides two case study examples from teachers with SCORE Fellowships (Support Centre for Open Resources in Education) from the Open University.

### **Practising Open Education: Art, design and media - challenges and opportunities**

Open educational practices pose distinct challenges for creative disciplines in higher education. Art, Design and Media (ADM) studies, by their nature, often feature an emphasis on practical studio and workshop based activities, with a pedagogic culture marked by an emphasis on mentoring, apprenticeship and peer support. In some ways the teaching of ADM subjects can be seen to represent the epitome of the traditional campus ‘walled garden’ and face-to-face model of teaching. In many of these subject areas there can be a shortage of didactic learning and teaching materials, representing a challenge for engagement with open educational practice in relation to the production and sharing of open educational resources.

Open Educational practices also present opportunities for higher education teachers in these disciplines. The contingent and provisional nature of knowledge in creative practice disciplines and the high value placed on dialogue, aligns well with the multiple perspectives and approaches afforded by open educational practices. This orientation towards practice can take advantage of the potential for sharing and co-creating skills-based resources. Similarly, those disciplines where consideration of audience for creative cultural production practices is key can also find opportunities. This paper proposes that these characteristics of the disciplinary cultures in ADM subjects provide a good natural fit with open educational practices and that by creating online environments that facilitate the sharing of practice and process lecturers will find the transition to ‘teaching in public’ less formidable.

### **How are developing open educational practices impacting on teachers and teaching practices in ADM subjects? What is the ADM response?**

#### **Findings from Practising Open Education (Brighton)**

The Practising Open Education project, led by the Art Design Media Subject Centre at the University of Brighton aimed to investigate understandings of open educational resources and practices with six art, design and media departments in UK HE institutions. By directly engaging with teaching and support staff the project sought to encourage the partners in developing appropriate strategies to support open educational practices. In focus group discussions with staff several key themes emerged evidencing burgeoning impacts of open educational practices: upon the changing role of ADM teaching and teachers; the role of studio pedagogies; and the departmental responses to these challenges through activities which centred on: staff development; policy development; and resource and repository development and evaluation.

It is difficult, at this early stage to say how existing ‘open educational resources’, are impacting on teaching in art, design and media. The development of more ‘open’ ways of working is burgeoning and shifts in teaching practice are related to a broader online ecology and a glut of online digital resources that may or may conform to standard definitions of open educational resources, and may or may not be appropriately licensed. For the art, design and

media colleagues we spoke to, the in-house virtual learning environment still holds sway. However, the development and use of digital resources and tools moving towards openness are having significant impact on teaching practices and teachers in this disciplinary field. Three notable aspects are considered below:

### **1. Reorienting the teaching role**

For many tutors the proliferation of online material and sharing tools necessitates a fundamental shift in thinking about the role of the lecturer/ tutor, and move into the role of ‘facilitator’ or ‘guide’. Part of this role is about assisting learners (and developing their own skills) in navigating and evaluating resources critically and effectively.

“It’s changing the role of the teacher... we need to put students into the self-learning mode ... we [teaching staff] need to put in the educational context.”

Online sharing tools such as blogs are perceived as effective instruments to support group work and peer-to-peer learning. They are seen as of particular value in disciplines where assessment often aligns with process rather than outcomes and are utilised as a means for students and staff to chart processes and reflect on progress.

"Blogs are the new ‘sketchbook’ – more collaborative and promote group work.”

### **2. Supporting students’ skills development**

The ability to develop and share teaching and learning materials within institutional VLEs, on institutional webpages, occasionally in open institutional repositories, or on platforms such as YouTube, VIMEO, Slideshare and i-Tunes U, is having the most impact in the area of skills development. Worksheets and multimedia instructional tutorials are being developed to support the teaching and learning of practical skills and techniques in areas where (as everywhere) there are limits to the provision of technical support.

"In digital animation there is a lack of technical support so we have videos to show technique – this is growing resource [with] more being made.”

There is also acknowledgement, and significant use, of existing public resources to support skills acquisition that can be accessed from platforms such as YouTube, Flickr, and TED. Linking to these existing materials via institutional VLEs is fairly common practice. The development and use of resources to support skills learning are both considered time-saving measures that enable the provision of more support, including additional support for students with access and time difficulties and for whom English may be a second language, for less resource:

“Don’t want to waste time reinventing the wheel – I collect hits [resources] and upload to Moodle – ‘more for less’”

### **3. Enhancing teaching practice**

Moves towards more open ways of working are impacting on teachers and their professional development as they utilise existing resources as a benchmark for the development of their own resources and as a basis for ‘embellished’ or ‘improved’ versions.

“I use to compare my teaching, to ensure I’m on track.”



Many staff perceive the sharing of teaching resources as a basis for collaboration with students and with colleagues at a departmental, cross-departmental and inter-institutional level. We heard examples of the collaborative development of resources across institutions and suggestions that such peer sharing holds the potential to raise pedagogic standards in art, design and media subjects.

“They can open up channels ... provide the potential to collaborate.”

This relates to the established practice of identifying, building on, or improving existing online resources produced by academics in other institutions and some academics see this as aligned to the creative practices that are at the core of art, design and media higher education:

“It’s fun to find resources have been used and remixed ... it’s fun to build on the work of others, it’s a creative activity.”

More ‘open’ ways of working also hold profile-raising possibilities for individual staff. We heard examples of teacher-design practitioners using their personal websites to host their teaching resources, reporting benefits in attribution and finding their employer institution linking to their online professional profiles. These profile-raising possibilities extend, of course, to the department and institution and there are many examples of institutions developing and sharing resources (for example, interviews with staff and alumni), to inform prospective applicants of course and teaching provision.

### **Disciplinary Considerations – Studio Pedagogies**

As anticipated the discussions through the project with art, design and media teaching staff elicited a range of topics common to all disciplines: concerns over workload; ownership of intellectual property and copyright infringement; quality assurance and critical engagement with OERs. However participants also indicated that the development of open educational teaching practices offered an opportunity to align traditional subject discipline characteristics with evolving online digital pedagogies. And in consideration of skills-based teaching in ADM subjects, as detailed earlier, the use of widely available resources was highly effective.

Art and design higher education is distinctive in its studio-centred pedagogies, which for some appeared to be in conflict with the use of OERs, but for others a natural progression towards the collaborative characteristics of open educational practices. The inclination for both ADM staff and students to exhibit, share, network and develop communities were characteristic features of open educational practice. The visibility afforded by the creation and use of online materials offered an opportunity not only to profile staff and student work but in addition reinforced departmental identity

There was acknowledgement of the alignment between “studio and online motivations”; in an art, design and media context, students have professional motivations to make their work available to audiences external to the university. Referencing Professor Henry Jenkins (MIT), one participant suggested that online technologies can further the collaborative nature of studio cultures (<http://web.mit.edu/cms/People/henry3/>)

“Motivations in studio and online for Art & Design students are the same.”

The traditional ‘studio’ environment and practices are presented, by some participants, as ideal conditions for collaborative working and interaction in art and design education. However it was recognised that open educational practice is perceived as challenging this

way of working and, implicitly, as related to individualistic approaches to learning characterised by the subject disciplines' inherent drive to create and show their work. The challenge being to shape open educational practice to studio pedagogies.

“[We are] able to investigate suitability of OERs to studio-based courses – OERs should enhance Studio Pedagogy by focusing on the development of creative attributes.”

### **Departmental Responses**

The project provided each of the partners the opportunity to develop 'actions' in response to discussions identifying department-specific strategies to support the wider take-up of open educational practices. These strategies could be loosely collated under the themes: (i) staff development; (ii) policy development; and (iii) resource and repository development and evaluation.

#### **(i) Staff development**

As a consequence of their involvement in the project all the partners developed strategies that encouraged greater staff and student awareness and engagement with open practices and OERs. There was an acknowledgement that the key driver was cultural change and offered opportunities for staff to showcase research, resource development and areas of IT support. All the partners outlined 'actions' provided staff support and CPD incorporating further focus groups, case studies, workshops, departmental presentations, IP, use of open licenses and copyright guidance, and repository good practice guidance. Examples ranged from: 'How to' guides including 'Enhanced Learning Through Technology'; Workshops including linking Blackboard 9 with EdShare [Repository], Copyright, Intellectual Property guidance and Use of Creative Commons licenses; and Departmental Presentations showing the benefits of OERs.

#### **(ii) Policy development**

As the project aimed to 'seed' open educational practices within the participating departments it was expected that this would encourage greater dialogue without directly impacting on immediate policy development. However, progress was made as the partner institutions encouraged staff to identify other means of support; SCORE Fellowships and JISC funding proposals for example. There was support for embedding the use of OERs in teaching, learning and assessment strategies and in one institution there was recognition of the need to move toward the wider use of Creative Commons licenses, "to begin to adapt current regulations to allow this in future to enhance our ability to produce OERs".

#### **(iii) Resource and repository development and evaluation**

All of the project partners identified the need to align staff support and CPD with long-term rigorous resource evaluation, repository development and IT engagement. The strategies presented by the partners ranged from: website development; usability testing; resource rating systems; resource creation and e-portfolio guidance. More programme-specific actions included the development of OERs for PGT Research Methods Module: 'Research Methods for Art and Design students'; the development of a series of lectures/demonstrations, using Camtasia screen capture software, aimed at accessibility and students with Asperger's Syndrome and capturing workshop techniques and demonstrations used in industry for an fashion course.

### **Findings from ALTO and ALTO-UK (University of the Arts London)**

#### **ALTO**

To begin with, and in accordance with the existing technological hegemony in education in the UK, the ALTO project (Arts Learning and Teaching Online) initially started out by committing to acquire and install a specialist repository software package. Repository software is optimized for storage and management and operates using a library paradigm, but is not good at presenting or publishing information. These limitations rapidly became apparent in the context of ALTO and the Art and Design academic community, who traditionally place a high importance on ‘look and feel’ i.e. affective and usability issues.

We realized that while a repository might be a solution for meeting institutional storage requirements, it alone would not be enough for open education development. We came to understand that ALTO needed to be more than just one software tool – it would need to be a system of connected and related tools. A repository gave us a place to safely and reliably store resources in the long-term for which there was already a strong institutional need. We came to see that the ALTO repository needed to fit into and be a part of a wider and dynamic ‘ecosystem’ for creating open online resources and supporting their associated communities of practice. Two things became clear. First, was that resources in the repository would need to be easily ‘surfaced’, in a variety of social media to aid dissemination and impact. Second, that the other components of such a UAL ecosystem would want to use the repository to deposit some of their outputs now that the a long term storage service was possible.

Fortunately, a communal social media platform was already available through an existing UAL initiative called Process.Arts (<http://process.arts.ac.uk>):

*“an open online resource showing day-to-day arts practice of staff and students at UAL”*  
(Follows, 2011).

This originated as a small personal research project to explore how to meet the need for staff and students to show and discuss aspects of their practice as artists and designers by providing a collaborative space using the Drupal web content management system, which includes many common Web 2.0 features. The ALTO project decided to support this initiative and it has since been very successful in a short time, with users uploading images and videos and discussing each other’s work. User numbers and interactions are high and growing with considerable interest from abroad.

Through this experience, we came to understand that if the repository were to be the officially branded ‘library’ part of ALTO then Process.Arts would provide the ‘open studio and workshop’ where knowledge and resources are created and shared. As a result, the project board took a decision to redesign the initial architecture of ALTO to add a ‘social layer’ to the initial repository, which incorporated Process.Arts. As at 2012, the evolving institutional infrastructure can be viewed at this web site <http://alto.arts.ac.uk/>. The digital library component can be viewed at this web site <http://alto.arts.ac.uk/filestore/>, and the social layer which provides an open collaborative studio/workshop space can be viewed at this web site <http://process.arts.ac.uk/>.

The ALTO project was aimed at developing the University of the Arts London (UAL) engagement with OER creation and sharing, the project was implemented in 2010 – 11 during a tumultuous and uncertain time in the UK HE sector, with large funding cuts for institutions like UAL specialising in arts and humanities. The financial strain and anticipated further changes to our provision meant some staff were, understandably, reluctant to engage in discussion regarding OER creation and reuse. Despite this, interest has remained high and many have engaged, agreeing to create and share their resources. Intellectual Property Rights

(IPR) issues, as expected, were an important part of the project and the ALTO team worked with the UAL legal department to get the use of Creative Commons licences officially accepted, institutional policy in this area is also being revised as a result.

An important early output was a clear and short set of ‘statements of principle’ that provide a rationale for the ALTO project and outline why people should be involved<sup>13</sup>. As the project progressed it became clear that there was a considerable amount of demand from UAL staff for an easy means to showcase their work, which could be leveraged into OER engagement. It also became clear that the UAL in common with most other UK art and design institutions did not have an officially supported web channel to allow ‘self publishing’ of this kind.

Engagement with OER can be a powerful driver for learning and development, as the process of resource creation requires reflection on ones own teaching and professional practice. When done by many individuals across a department, college or university this can lead to broader cultural change. In addition, as has been evident in other institutions aggressively undertaking OER creation, collaboration and sharing with the external world can break down internal barriers by making them seem insignificant in the context opening up ones practice to the world (Lane et al, 2009). A central ‘official’ place to share and store OERs like ALTO can also give an institutional endorsement to this cultural change.

A key finding of the project was the successful use of ‘fieldworkers’ (the use of college coordinators) to provide a direct link to front line teachers for the UAL project parent body (Centre for Learning and Teaching in Art and Design - CLTAD). This project allowed us to explicitly design and fund this approach to support OER release. The project manager and coordinators spent a majority of their time working with individuals and groups on the ground to help them share and reflect on their resources and practice (especially in the context of collaborative learning design). This has a lot in common with ethnographical approaches to successful socio-technical systems development as advocated by Edith Mumford (1995) and Ettiene Wenger (1998 & 2009). The ALTO team are providing valuable insights from their ‘fieldwork’ giving CLTAD timely and relevant information regarding practices undertaken and conditions encountered by front line teaching staff. This combination of an OER repository and online open workshop/studio/seminar system with attached ‘fieldworkers’ collaborating with front line teachers while also working with a central educational development unit could provide a model for an economically sustainable means of enhancing educational provision in HE in a time of austerity.

## **ALTO UK**

The ALTO UK (<http://blogs.arts.ac.uk/alto/alto-uk/>) project was a follow-on project that sought to apply the lessons learnt from the initial ALTO project to a group of art and design institutions. ALTO-UK also included a small pilot exercise to open up the UAL Process.Arts social media platform for use by the project partners. This pilot exercise was also intended to explore a possible solution to the needs in the UK Art and Design HE community for an easy mechanism to publish content to the open web. This need has been driven by the desire for a platform for academic and professional promotion and networking, the online organisation and public showing of student projects and the projection of the distinctive culture of art and design studies. Many institutional infrastructures and service departments cannot meet this need for an easy online publishing platform. This is resulting in staff often using external web hosting providers, web design companies, and Web 2.0 services; causing waste, duplication, extra costs and lost opportunities for the sector.

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<sup>13</sup> <http://blogs.arts.ac.uk/alto/about/>

The ALTO UK project aimed to target this service vacuum by providing a prototype of an on-demand easy to use web-publishing platform and social networking tool for staff and students. This same platform provides opportunities for users to release their resources as OERs with Creative Commons licenses, significantly lowering the threshold to engaging with OER creation, sharing, collaboration and reuse – critical for long term sustainability<sup>14</sup>. The pilot service is also linked to the national UK learning resource repository service, Jorum<sup>15</sup> to encourage users to think longer-term by depositing in the national learning resource repository and will expose them to the resources available in Jorum for possible repurposing and reuse. Longer-term the ALTO UK proposal and concept has the potential to provide a ‘shared services’ approach that is aligned with current policy priorities<sup>16</sup> and helps to meet some pressing unmet needs.

### **SCORE Fellowship Case Studies**

The following two case studies are presented here in an abbreviated form, as they are both featured in a separate conference presentation appearing in the proceedings under the title of; *Exploring OER rich media reuse through social media content communities*.

#### **Case study example 1 - SCORE Fellowship project details (Sarah Atkinson)**

Sarah’s work into film and audiovisual media open archives as OER includes an in-depth case study into SP-ARK (<http://www.sp-ark.org/>).

The SP-ARK archive provides a unique example of the successful marriage between the principles of open educational resources and open archives. SP-ARK is an interactive online project based on the multi-media archive of filmmaker Sally Potter. Over the past five years, the archive has been developed to a Beta-testing level, and includes the intuitive visual navigation of one of Potter’s films, *Orlando* (1992), and all of the related assets. All of the resources have been digitised and meta-data has been added relating to the items description and association with other assets. The copyright to all of the materials belongs to *Adventure Pictures*, and they have chosen to allow access and use of the materials via a Creative Commons licensing model. Users are able to view clips from the film as well as a myriad of associated materials including the scripts, storyboards, still images, location and developmental paperwork, using the intuitive visual browsing interface. Users are then able to build their own unique ‘pathway’ through the archive’s content as they explore a particular theme or process; they are able to save items that they have viewed. Each item in their pathway can be annotated with comments, observations and streams of thought. Other users are then able to access each other’s pathways and to link to them within this further level of user-led archival exploration. This type of interaction has the potential to foster a deeper engagement with the materials, encourages the sharing of ideas and practices, and creates a user-community around the archive’s content.

The archive has the potential to support and inform the approaches of emerging online film-based repositories as they grapple with the issues of openness, reuse and licensing. The project ultimately provides an innovative example of a higher education institution and archive collaboration in action, which could in turn provide a compelling model for the development of a type of open academic practice in the future.

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<sup>14</sup> The ALTO UK platform also meets several of the JISC OER Phase 1 aspirations set out in the ‘Leeds Manifesto’, notably for more usable tools for dissemination see

<http://www8.open.ac.uk/score/oer-and-sustainability-leeds-manifesto-draft>

<sup>15</sup> <http://www.jorum.ac.uk/>

<sup>16</sup> For example see [Collaborate to compete: Seizing the opportunity of online learning for UK higher education](#)

### **Case study example 2 - SCORE Fellowship project details (Chris Follows)**

This case study describes Chris's work in developing Process.Arts from a small personal research project into a growing community of practice and how the UAL aims to develop a sustainable approach to open educational practice through the agile development of existing open/social educational media content and associated communities. A summary of UAL's experience of developing the social media platform Process.Arts (<http://process.arts.ac.uk/>) is provided as well as investigating its potential integration with the wider arts sector and open education movement through SCORE fellowship research, ALTO UK and the DIAL project (digital Integration into arts learning) part of the JISC UK Developing digital literacies programme.

Institutional VLE's and OER repositories are rarely built to support social media content communities, as a result many learning and teaching materials are being independently dispersed across the web using more familiar and user friendly 'social media' environments such as wikis, blogs, independent websites, YouTube accounts etc. There is currently no middle ground to facilitate OER content communities. A question to address is how can OER communities adopt social media tools and practices to help improve and encourage better rich media OER practice? Key challenges for the rich media reuse community are finding or being directed to the most useful and usable open content. Random Google searches will sometimes get you what you want but the content will be more than likely high risk and non-reusable in an OER sense. Finding OER rich media reusable 'gems' in such a granular landscape is difficult and random standalone pieces of media content can be difficult to assess in regards to reuse, remixing this content even more so. How do we share and collaborate in this space and overcome the obstacles of use and re-use specifically when creating and designing complex rich media learning content? The presentation draw on four different perspectives of developing media content communities within practice based art and design subjects including the original Process.Arts development, SCORE research, ALTO UK (JISC UK OER programme), <http://process.arts.ac.uk> and the DIAL project (Digital Integration into Arts Learning) <http://dial.myblog.arts.ac.uk/> part of the JISC UK Developing digital literacies programme.

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# **E-Assessment, OERs and learning: Exploring a Relationship of Dependence and Mutual Benefit**

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# Enhancing Curriculum Design and Delivery with OER

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## Abstract

This paper reports on the key findings from the EVOL-OER project which aims to develop a deeper understanding of the reuse of open educational resources (OERs) by academics in Higher Education Institutions (HEIs). This paper builds on the JISC OER Impact study by exploring and expanding on the Ratified quadrant of the study's landscape of reuse framework (White & Manton, 2011). This paper puts forward a different four-quadrant diagram called 'OER-enhanced curriculum' to illustrate different approaches adopted by academics to embedding OER into curriculum design and delivery. Key issues in relation to motivation and challenges in reusing OER are discussed.

## Keywords

OER, Curriculum design, Curriculum delivery, Reuse, Repurpose

## Introduction

This paper reports on the key findings from a research project called EVOL-OER ([www.le.ac.uk/evoloer](http://www.le.ac.uk/evoloer)), funded by SCORE ([www8.open.ac.uk/score/](http://www8.open.ac.uk/score/)). EVOL-OER aims to develop a deeper understanding of the reuse of open educational resources (OERs) by academics in Higher Education Institutions (HEIs).

UK funding has largely been allocated to projects that focused on the creation of OER repositories and promotion of a sharing culture among academics in HEIs to release their resources as OERs. There is a lack of understanding of how the OERs accumulated in the repositories are being modified and reused over time. Limited research has been conducted to investigate the detail of OER reuse. Based on a study conducted as part of the SONET project ([sonet.nottingham.ac.uk/](http://sonet.nottingham.ac.uk/)), Windle et al. (2010) identified reuse patterns in terms of how reuse spreads from one institution to another. Wiley (2007) categorised types of pedagogical reuse engaged in by the end users in terms of: as-is, technical adaptations, linguistic adaptations, cultural adaptations, pedagogical adaptations, and annotation as adaptations. The ORIOLE project ([orioleproject.blogspot.com/](http://orioleproject.blogspot.com/)) aims to tackle questions such as motivation and concerns around reuse.

The JISC OER Impact study looked into reuse of both OER and non-OER by staff and students in higher education. It uses the image of an iceberg to illustrate reuse that takes place at an institutional level and suggests that the majority of reuse takes place below the surface, in contexts that are not publicly visible. The study categorises the patterns of reuse by staff and students into four quadrants: Independent, Appropriated, Strategic and Ratified. Only in the Ratified quadrant do staff embed properly licensed OERs into curriculum. In the other three quadrants, staff and students discover and use mainly non-OER resources individually, or link or embed these resources to the institution's VLE to support teaching (White & Manton, 2011).

These initial investigations into reuse provided a foundation on which the EVOL-OER project is based. EVOL-OER expands on the OER Impact study by exploring the iceberg above the surface and expanding on the Ratified quadrant of its landscape of reuse framework. EVOL-OER put forward a new four-quadrant framework called 'OER-enhanced

curriculum’ to categorise reuse patterns by academics in HEIs. We discuss this framework and provide examples to illustrate how academics use different approaches to embed OERs into curriculum. We also discuss drivers and barriers faced by academics for the reuse and adaptation of OERs.

### Research methods

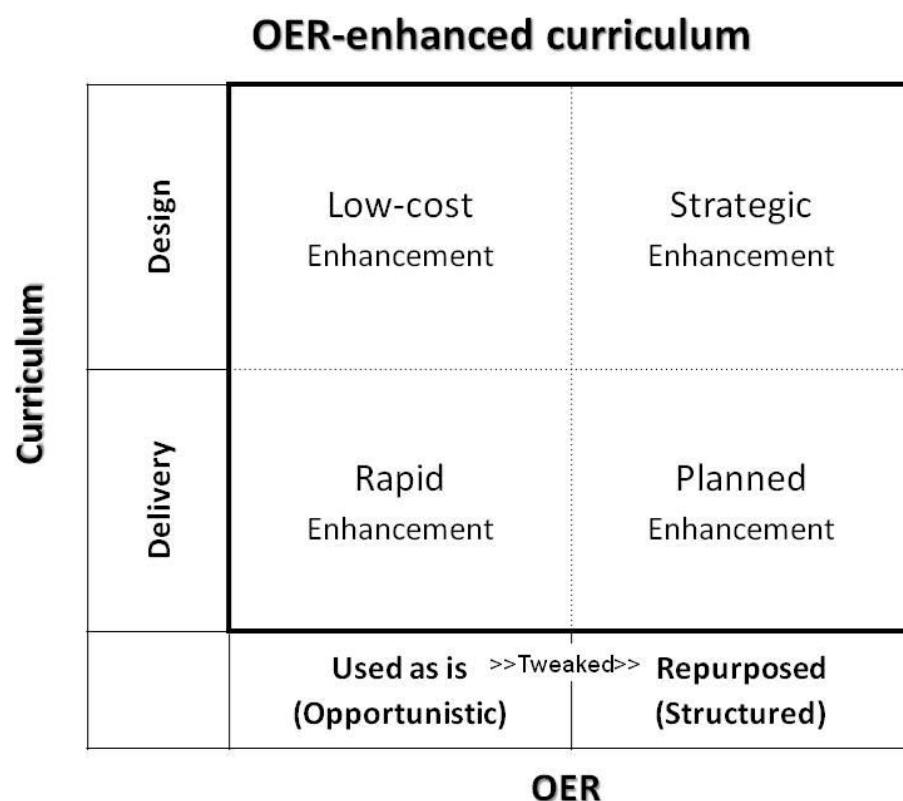
EVOL-OER uses qualitative methods. So far, semi-structured interviews have been conducted with ten HEI academics who have had extensive experience in reusing OERs. Eight of the interviewees are UK based. Two interviewees are from overseas institutions (one in South Africa, one in Nigeria). Two interviews were conducted with the project managers to two OER projects, both are based in the UK, but they talked about experiences of how overseas institutions adapted OERs created as part of their project. In addition to the interviews, analysis of examples and case studies from OER Africa was conducted as part of the research.

### OER-enhanced curriculum

We put forward a new four-quadrant framework (Figure 1) to illustrate how academics in higher education enhance curriculum with OERs.

Figure 1. OER-enhanced curriculum.

Source: Adapted from Armellini, A. (2011). Designing for openness. A presentation at Online Educa, Berlin, December 1-3, 2011. Also available at <http://beyonddistance.wordpress.com/2011/10/05/penness-and-learning-design/>



The dual-axis figure above maps curriculum design (vertical axis) against OER design (horizontal axis) and shows the four types of enhancement that can be achieved during the design and delivery stages. The top-right quadrant requires significant effort in embedding

repurposed OER into curriculum design in a structured way for long-term enhancement, while the bottom-left quadrant constitutes reusing OER ‘as is’ at minimal cost for rapid enhancement at the curriculum delivery stage in the short-term.

It should be noted that the evidence from EVOL-OER indicates there are no clear and distinctive boundaries between the four quadrants. In practice, the way academics reuse OERs is likely to fall into the continuum of using OERs ‘as is’ to repurposing them. Their purpose for reuse is also likely to fall into the continuum of using OERs for short-term curriculum delivery to in curriculum design for delivery in the long term. The boundaries are rather blurred. The following sections provide detailed description to each quadrant and examples that illustrate each type of enhancement.

### **Rapid enhancement**

This quadrant refers to enhancing the delivery of a particular teaching session by reusing OER. These academics tended to reuse an OER ‘as is’ by either embedding it or providing the link to the OER in their teaching material, or by just sending the link to the OER to students by email. Their reuse is likely to be one-off or for a couple of teaching sessions rather than for long-term enhancement. The OER used can be core to the teaching session or used as a supplementary resource.

Examples of rapid enhancement captured by EVOL-OER include the provision of links to YouTube videos, or TV programmes, or other types of open resources to students. The links are usually embedded in a lecturer’s presentation slides, used and played at a particular teaching session, or sent to students by email as a supplementary resource which students can use before or after a lecture.

### **Planned enhancement**

In this quadrant academics reuse OERs for the same purpose as those in the Rapid quadrant, but the OERs are tweaked or repurposed to some extent to make them more suitable for the teaching context rather than just being reused ‘as is’.

Examples of planned enhancement identified by the research include embedding resources which have been tweaked, remixed, contextualised or localised from OERs in the teaching material; and adding wrapping information to an OER that has been embedded in the teaching material to instruct students about the relevance of the OER and how they might use the resource for their study.

### **Low-cost enhancement**

This quadrant refers to embedding OERs in the curriculum design at minimum cost. The academics working in this quadrant tended to reuse OERs ‘as is’ or with minor changes. The purpose of embedding OERs in the curriculum is for long-term enhancement rather than just for supporting one or certain teaching sessions.

One example of low-cost enhancement is from Africa, where there is a lack of access to quality resources. For instance, the provision of e-books and OERs to students by various African institutions as part of their teaching programmes. These resources are normally provided in their original forms and organised into categories such as: images and animations, courses and lecture notes, papers and articles, guides, open and online journals, and e-books, and made available to students via CDs or DVDs. Some of these resources are core to the teaching programmes, some are additional. Students can treat these resources the same way as those recommended by a lecturer in the usual course reading list.

Another example of this type of enhancement is from an institution in the UK. It involves the provision of a set of OERs on Study Skills. These OERs were adapted from OERs from a number of UK-based institutional repositories, with minor changes. These OERs are beginning to be embedded formally in the teaching and training programmes to the research students within that institution.

### **Strategic enhancement**

This quadrant refers to embedding OERs in the curriculum design formally in a structured way. The academics working in this quadrant tended to repurpose OERs either for long-term enhancement of their curriculum, or for the development of an open course, an open textbook, or a set of open resources, which then become the core resources for others to reuse.

We identified many examples of strategic enhancement in the EVOL-OER project, for instance, the incorporation of Criminology OERs into a Sociology course; and embedding of multimedia OERs in an Arts and Design course, for long-term enhancement.

Other examples include the development of a new course on Lab Skills by drawing on OERs from a range of repositories. This open course will be used for teaching lab skills to students in Health Sciences within that institution from September 2012. The creation of an open textbook on Communication Skills by repurposing OERs from various open resources is an example from one of the African institutions. This open textbook has been embedded in the institution's curriculum and has been subsequently reused and adapted by another institution in Nigeria for the development of their own textbook on Communication Skills for trade union leaders.

TESSA (Teacher Educational Resources for Teacher Education in Africa, <http://www.tessafrica.net/>) developed a set of open resources which can be used by a wide range of Teacher Education curricula offered by different institutions in Africa. At one partner institution, TESSA material has been written into the course material and delivered as part of their Diploma for Primary Education. At another partner institution, TESSA material has been written into the teaching guidance for supervisors to the Teacher Education programme. Similar to TESSA, the ACEMaths ([http://www.oerafrica.org/acemaths/ACEMaths\\_ProjectHome/tabid/132/Default.aspx](http://www.oerafrica.org/acemaths/ACEMaths_ProjectHome/tabid/132/Default.aspx)) project developed an open textbook on Teaching and Learning Mathematics. This open textbook has been adapted by six institutions in South Africa and incorporated into their Maths Teacher Education programmes in various ways (Sapire, 2010).

The Bridge to Success (B2S, <http://b2s.aacc.edu/>) project developed two open courses: Learning to Learn and Succeed in Maths, for adult learners studying in American Colleges. The B2S content has been embedded in different courses and programmes offered by different partner colleges, and used for face-to-face, online or blended teaching.

### **Barriers and drivers**

We have shown examples of how academics enhanced their curriculum design and delivery by reusing and integrating OERs. How academics make their new or transformed materials available is very different. Some made their new materials into proper licensed OERs and published them on an OER repository. Some made their transformed materials only available via their institution's VLE. Some used the new materials for teaching without sharing and

publishing them anywhere. This suggests that reuse is happening; however sharing back the reused resources has not become common practice yet. This is worth further investigation.

Localisation plays an important part in reuse. Sometimes it can present a barrier for reuse especially when the source material is created in one country and the reuse and repurposing is happening in another country. Our research showed that academics overseas, for example, a colleague from South Africa drew on OERs mostly from African repositories because they were more culturally and locally appropriate and relevant. She found OERs created by, for example UK institutions, difficult to adapt. Another example is that a lecturer in Criminology had to reject some OERs created by American institutions because the subject he teaches in the UK includes legal information. English sources can be adapted quickly whereas materials with American legal sources take more time to adapt.

Development of digital literacy skills in staff is critical for OER to be taken up at an institutional level. Lack of technical skills and support has been reported as the key factor affecting the level of modification, especially with multimedia OERs. Lack of understanding of copyright and licensing has been reported as one of the key barriers for OER reuse. Evidence showed that some academics provided links to OERs instead of embedding them properly in their teaching material to avoid problems with copyright and licensing. These issues should be addressed through an institution strategy for the development of digital literacy of the staff and for the promotion of an open culture and practice.

Differences in motivation and challenges for reuse have been found in different countries. For example, in the UK, improving the quality of teaching material, increasing reputation, opening up new pedagogies and approaches for teaching and learning, and a vision of the benefits of sharing are identified as key drivers for reuse. In African countries, scarcity of resources is prominent. Limited access to computers and poor internet connections present difficulties and have an impact on the way the reused resources are provided to and used by the end users.

## **Conclusions**

Based on the research from EVOL-OER we have put forward an OER-enhanced curriculum framework to categorise reuse patterns adopted by academics in higher education, particularly with regard to reusing OERs for the enhancement of curriculum. Specific examples were introduced to support each of the four types of enhancement. We discussed pertinent issues in reuse, such as the need for sharing back reused resources and development of digital literacy of staff. We also discussed drivers and barriers and their impact on the strategies adopted by academics for reuse. EVOL-OER is ongoing and the framework will be updated and informed by new findings throughout the project lifespan.

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# **Flexible paths to assessment for OER learners: A comparative study**

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## **Abstract**

This paper highlights the preliminary findings of a one-year research project that investigated the fit of recognizing prior learning (RPL) practice and related assessment and transfer protocols to projected OER use, specially by the Open Educational Resource University (OERu), a newly-formed consortium of like-minded institutions located worldwide. Across a study that included 31 post-secondary institutions from 10 countries, findings indicated both consistencies and inconsistencies in the treatment of RPL. While most institutions reflected the intent of honoring learners' prior learning, achieved informally or non-formally, institutions were bound by internal policy and structure in terms of protocols. The relationship of transfer credit opportunities to engaging with learners in preparing RPL documents for assessment was also varied. Broad disparities in fee information made it difficult to determine what the actual costs of various protocols would be for learners. OERu will continue to search for innovative approaches to providing universal and collaborative education, globally, to non-traditional learners.

## **Keywords**

Open Educational Resources, OER, Open Educational Resource University, OERu, assessment, recognition of prior learning, RPL, access, credentialisation, policy

## **Introduction**

The opportunities for innovation in the developing OER world are endless. Recently, established institutions such as Stanford and MIT have once again stepped up to the OER plate in various ways. Concomitant with and equally important to offering openly accessible learning is the consideration of how to acknowledge, assess and recognize what has been learned, in ways that are acceptable to learners, institutions, and, ultimately, employers. Among major initiatives in the global push to further the OER agenda has been the creation of a consortium of institutions under the umbrella of the Open Educational Resource University (OERu), described more fully below.

In order to provide maximum access to learning, in fulfillment of its mandate, OERu acknowledges that learners' prior learning is a valuable commodity both in its own right, as a rich source of knowledge, but also in what that prior learning brings to learners' paths as they continue forward in their quest for self-fulfillment, status, and recognition through credentialisation. Recognizing learners' prior experiential learning (RPL), already an innovative practice in many tertiary or post-secondary educational institutions, presents both opportunity and challenge to OER practitioners. Existing RPL practices are usually deeply embedded within individual institutional policy and practice. In some cases, such practices are labor-intensive and not particularly cost-effective or scalable. The definition of RPL practices and the relationship of various types of assessments to each other are also often unique to institutions and are understood to be disparate and even a source of contention within the field.

This presentation will highlight the preliminary findings of an ongoing research project that investigated the fit of RPL practice and related assessment and transfer protocols for envisioned use of informal and non-formal learners toward assessment and accreditation. Non-formal learners are those who attend "other organised, systematic educational activity"



(Selman, Selman, Dampier, & Cooke, 1998:11) which is offered outside of traditional, credential-offering institutions. Informal learning, on the other hand, is “unorganized, unsystematic, at times perhaps even unintentional (Selman et al: 12), and is often also referred to as experiential or happenstance learning.

Targeting practices in various countries around the world, researchers sought to determine the nature and scope of a variety of institutional RPL approaches. The project aims to identify scalable solutions for post-secondary institutions to help non-traditional students gain academic credit. An understanding of how different institutions are approaching the recognition of non-formal and informal learning will provide change agents within universities with new knowledge on how to extend and expand their learning missions by creating flexible pathways to facilitate the credentialisation of students who may be non-traditional given their demographic, learning mobility, and dependence on open educational resources accessed through digital learning.

### **The Open Educational Resource University (OERu)**

The OERu is an initiative of the Open Educational Resource Foundation, based in New Zealand, which has brought together a consortium of 13 public post-secondary institutions (OER Foundation, 2011). The goal of the consortium is to provide informal and non-formal learners with flexible pathways to formal assessment and accreditation using Open Educational Resources. These free learning opportunities for students anywhere in the world will be based on scalable pedagogies and will be enhanced with systems of volunteers (Mackintosh, McGreal, & Taylor, 2011).

### **Conceptual and theoretical issues around prior learning**

The recognition of prior learning is practised globally as a means of honouring and building on mature learners’ past experiential learning. UNESCO provides this short and effective definition of RPL: “The formal acknowledgement of skills, knowledge, and competencies that are gained through work experience, informal training, and life experience (Vlăsceanu, *et al.*, 2004: 55). Grounded in ancient philosophies, Western educators can look back to a more recent history in the work of Lindeman (1926) and Dewey (1938), who presented sound pedagogical rationales for recognizing adults’ experiential learning: “The beginning of instruction shall be made with the experience learners already have ... this experience and the capacities that have been developed during its course provide the starting point for all further learning” (Dewey: 74).

There are many ways in which to address adults’ prior learning and a number of sectors where these processes are applied. For the purposes of this paper, the discussion of RPL’s relationship to learning and knowledge will concern its use in post secondary educational settings.

Adults’ prior learning histories are generally classified according to their origins, that is, according to whether the learning has been obtained formally, at recognized institutions, non-formally, or informally, resulting from situations or environments outside formal institutions (Selman et al., 1998). Credentials obtained from study at recognized institutions are usually considered for transfer credit or qualification recognition at other formal institutions. Transfer agreements among institutions exist to standardize the movement of credit from one institution to another, usually simplifying, for learners, accessibility to post-secondary credentials within established jurisdictions.



Non-formal learning acquired by learners through training, workplace offerings, from non-accredited institutions, or simply through informal learning from life's lessons, however, is generally not accepted for transfer by accredited institutions. It is this type of learning that provides the material for the demonstration of prior learning that is generally referred to as prior learning assessment (RPL).<sup>1</sup> The process of demonstrating prior learning can take many forms at university level, although examinations and portfolio compilations are among the most popular. Performance demonstrations of skill-based learning are much less frequent in universities than, for example, in college situations where trades and hands-on training programs are more likely to be found.

Policy should guide RPL activities and quality assurance measures should safeguard its process. The American Council on Adult and Experiential Learning (CAEL) has long-established academic and administrative standards describing acceptable RPL practice.

### **The research study: Prior learning and OERu**

How should learners' prior learning best be acknowledged and addressed by OERu when its collaborative consortium concept would imply honoring each of its members' treatments of prior learning processes? To answer this question, researchers proposed to investigate the variety of ways in which prior learning protocols were enshrined and enacted in a representative sample of post-secondary institutions.<sup>2</sup> Specifically, these questions guided the research: 1) What are the different approaches to RPL being used by these institutions? 2) Which approaches are the most cost-effective or prohibitive in the OERu context?, and 3) Which approaches can effectively preserve quality assessment?

Researchers purposively selected 31 institutions from 10 countries in order to examine the policies and protocols addressing prior learning issues. (See Annex A.) Additionally, three related associations/consortia were studied to provide comparative and baseline information: Canada's BC Campus, CAEL (US), and Australia's Office of the Australian Framework Council (AFQ).

### **Adventures in consistency and inconsistency: Findings**

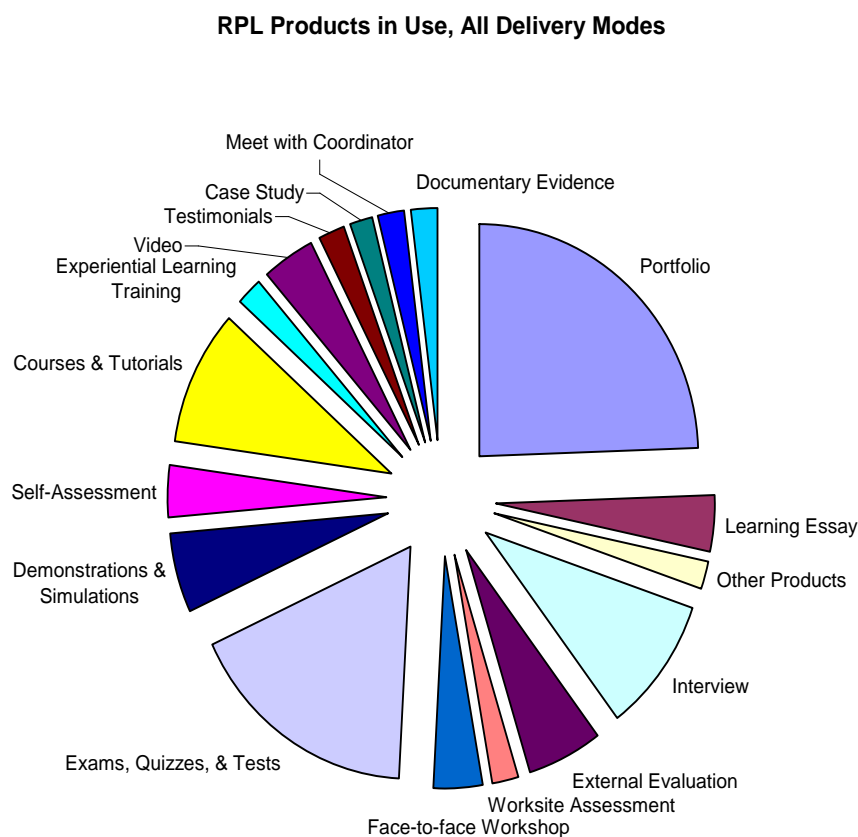
Findings to date illustrate an interesting mixture of consistencies and inconsistencies, most of which are not surprising to those acquainted with practice and theory in the area of RPL. In a field of practice sometimes defined by overarching frameworks (Australia, UK) and sometimes not (Canada, US), implementation of procedures is often guided by local institutional structure and/or politics. This disparity seems most prevalent in the logistics of cost where, not surprisingly, data were most difficult to obtain. Delivery modes sampled included both face-to-face and distance, although a majority of institutions did not indicate format.

**Perceptions of the nature of prior learning.** Fairly universally, from North America to Malaysia, from Australia and New Zealand to South Africa and the UK, the treatment of prior learning is usually divided according to that which is acquired formally, via accredited institutions, and that which is acquired non-formally, informally or experientially, very much along the lines of Selman et al's defining criteria (1998). The underpinning rationale to incorporating RPL into post-secondary level assessment – ascertained by the study of handbooks, definition, and policy – involved issues of fairness, access, and economy. Still, the practice is far from universally accepted or applied. Among the institutions studied, there was a range of assessment protocols in use. Of the 31 institutions, 22 practiced RPL (71%). Seventeen permitted the transfer of credit (55%). However, only 16 (52%) practiced both protocols.

**Types of assessment protocols.** It is fairly common practice to treat credit transfer and the assessment of experiential or informal learning separately and differently, although the treatments vary and the names by which they are called also vary. Also differing widely within institutions is the combination of processes that are conducted. In our own institution, for example, credit transfer – the acceptance of formally-acquired learning from other recognized institutions – is necessarily completed *before* the assessment of informal prior learning can occur. Capella University, Eastern Michigan State, and Empire State College, all in the US, have policies very similar to that of AU. At AU, credit transfer is handled by a department within the Office of the Registrar while RPL resides in its own unit. At the University of Leicester, on the other hand, both systems are classified as credit transfer; within that broad classification, however, APCL refers to Accredited Prior Certificated Learning while APEL refers to Accredited Prior Experiential Learning and procedures differ for each.

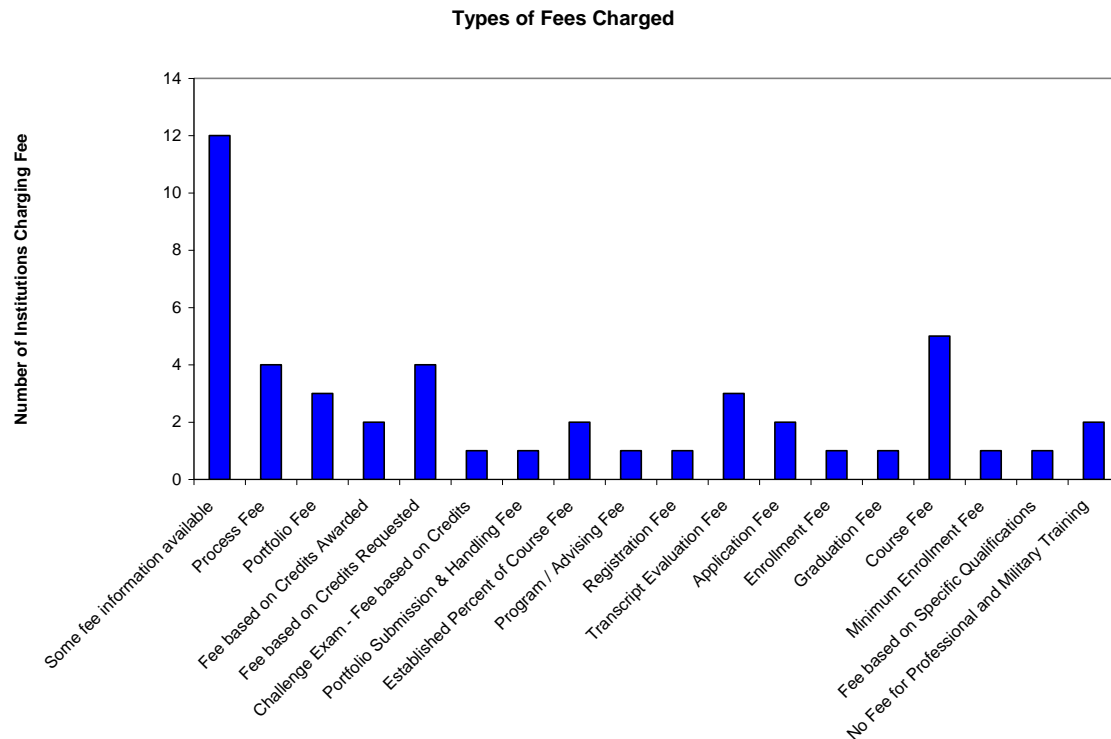
Assessment instruments span a wide range, sometimes determined by delivery format. At AU, for example, all assessment is conducted at a distance by email, telephone, or written communications. Empire State College in New York State, however, also a distance institution, conducts face-to-face interviews made possible by their many locations with the state. Among the 31 institutions sampled, by far the most-used assessment protocol was the portfolio. This was followed by exams, quizzes, and tests; interviews; courses and tutorials; demonstrations; self-assessment; external evaluations; learning essays; face-to-face workshops, and a variety of other tools. It is common for institutions to use one, more than one, and/or a combination of assessment methods, as illustrated in Figure 1, below.

Figure1. RPL Products in Use, All Delivery Modes



**Fees.** Only 12 of the institutions sampled provided fee information on their websites. Fees varied by label and type; more than one fee might apply in any one case; many fees are contingent on other fees. Within some institutions, fees are applied, per service, up to a maximum amount. Fee information is displayed in Figure 2, below.

Figure 2. Types of Fees Charged



### **The understandable, the irrefutable, and the possible: Discussion**

Universally, the discussions that accompany the consideration, implementation, or use of RPL are remarkably similar. Topics include both benefits and challenges, often weighing out the two sides of the coin toward decision-making around “what to do.” The American Shoreline Community College, in considering three possible avenues along which to proceed in moving forward with RPL, rejected the possibility of prolonging their system of disparate and “silo-ed” assessment vehicles and moved forward with a combined proposal of working with learners on an individual basis and/or implementing a portfolio approach (SCC, 2004). Likewise, the Malaysian Open University, in outlining the necessary paradigm shift that underlies implementation of RPL, for the oft-cited reasons of economy and access for learners, listed the concerns voiced by many other institutions, including our own: learner support, assessment rigour, internal structures and policy, quality assurance, and pedagogy. In making clear the philosophical underpinnings of RPL and distinguishing it from other processes, MOU clarifies the differences between “open entry” and RPL, noting their relationship to each other but emphasizing the necessary experiential knowledge base that underpins successful RPL (Singh, 2006: 3).

What seems to be indisputable, and what will affect OERu’s accommodation of RPL most cogently, is the fairly universal recognition of RPL as requiring labour-intensive and rigorous assessment. Universities and colleges practicing RPL outline assessment protocols that consistently include learner-advisor/ coach/mentor/facilitator interaction during preparation for assessment, whether that assessment be via portfolio (the most common method), interview, demonstration, workshop or course engagement, or by other methods. Institutions’ handbooks reiterated their commitment to assisting learners through the demanding process

of articulating their prior learning. In many cases, institutions' published information and handbooks clearly articulated many of the pedagogical issues underlying RPL: issues of fairness, of access, equality, culture, voice, assessor credibility, and learners' writing ability. Supporting RPL learners in their attempts to meet institutional academic standards was identified by several institutions as a very important issue.

From the literature, we also know that resistance within institutions to RPL practice, on the part of faculty, requires extra attention and quality assurance efforts in order to maintain the potential for a high level of achievement by RPL learners. Power and politics have long been recognized as factors within RPL practice (Harris, 2000; Peters, 2006).

The political reality of an institution frames, to a large degree, the possibilities that are open to an innovative strategy such as RPL. The stakes are heightened in a collaborative venture with OERu's global reach. Against the backdrop of many types of diversity, the implementation of prior learning assessment protocols has the potential for a wide range of applications and interpretations. As Usher, Bryant, and Johnston (1997) point out, "it offers a contestable and ambiguous terrain where different socio-economic and cultural assumptions and strategies can be differentially articulated. As a field of tension, it can be exploited by different groups, each emphasizing certain dimensions over others" (105).

### **Concluding remarks**

The research presented here regarding the potential for open assessment practices seeks ultimately to determine how potential OER practices will impact and benefit learners. Preliminary analysis conducted to date reflects the wide variety in tools and procedures in place across several institutions around the world. Complementary research is currently going on within OERu partners in order to determine ways to think about possible cross-crediting of OERu courses and ways in which systems of recognizing prior learning can take their place in assessment protocols and policy.

This study's new data is relevant to the development of these OER processes, useful generally to the growing field of research and fundamentally useful to the growth and integrity of OERu, whose vision includes an understanding that present higher education systems are not sustainable and not scalable for universal education. OERu seeks to find new, more cost-effective learning systems while ensuring a high-quality learning experience. Continued analysis of this study's data will contribute knowledge that will foster development of public and/or institutional policy in the areas of assessment, credit transfer, and the articulation of credentials.

### **Endnotes**

<sup>1</sup>While this paper uses the acronym RPL, some of the other names used for describing the recognition of prior learning are: APEL (Accreditation of Prior [and] Experiential Learning), PLA (Prior Learning Assessment), PLAR (Prior Learning Assessment and Recognition), APL (Assessment of Prior Learning), RDA (Reconnaissance des Acquis), or EVC (Erkennen van elders of informeel Verworven Competenties) (Michelson & Mandell, 2004).

<sup>2</sup>Research is being funded by Canada's Social Services and Humanities Research Council (SSHRC) for a one-year period.

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## Annex A

<b>Canada</b>	<b>Australia</b>
Athabasca University Thompson Rivers University College of the Rockies BC Campus*	University of Southern Queensland University of Wollongong The Office of the Australian Qualifications Framework Council (AFQ)*
<b>UK</b>	<b>New Zealand</b>
Leicester University Open University	Nelson Marlborough Institute of Technology Otago Polytechnic Northtec Massey University
<b>USA</b>	<b>Germany</b>
Empire State College (SUNY) Southern New Hampshire University UMassonline (University of Massachusetts) Eastern Michigan University Shoreline Community College University of Memphis Capella University Kaplan University Western Governors' University Council for Adult and Experiential Learning (CAEL)*	University of Duisburg-Essen
<b>India</b>	<b>Netherlands</b>
Dr. Babasaheb Ambedkar Open University (BAOU) Indira Gandhi National Open University (IGNOU) University of Delhi	Open Universiteit
<b>Republic of South Africa</b>	<b>Malaysia</b>
University of South Africa University of Capetown University of Pretoria	Wawasan Open University Open University Malaysia

\*Framework organizations

## **Government Policy for OER: Case study of Korea**

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## **High Impact OER: Connexions and OpenStax College**

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Phyllis Hillwig, Chief Strategy Officer, Words and Numbers

### **Abstract**

Limited access to higher education is one the greatest challenges facing students today both in the US and abroad. For many years, going to college was an opportunity to which only the wealthy could aspire. Yet, even with the great amount of scholarships and government aid available, many students still cannot afford college. One of the commonly overlooked costs associated with college affordability and student success is the ever-increasing price of textbooks and other learning resources. This is especially visible in the US community college space, where the cost of textbooks often exceeds the price of tuition. It has been documented that students are simply choosing not to purchase textbooks. OpenStax College, an initiative of Connexions ([cnx.org](http://cnx.org)), one of the world's first and largest OER repositories, is improving student access to quality learning materials. OpenStax College ([openstaxcollege.org](http://openstaxcollege.org)) brings together the innovative publishing features of Connexions with the rigors of professional content development and academic peer-review. OpenStax College plans to provide turn-key open textbook solutions for the 20 most popular US community college courses and beyond.

### **Keywords**

OER, open textbooks, remix, Connexions, OpenStax College, college affordability, Open Educational Resources

### **The Access Crisis**

Entering the 21st century, countries and individuals worldwide find themselves competing in a global economy that is ever more interconnected and ever more technical. With the recent 2008 recession, millions of workers are jobless, without the proper skills to work in global companies and industries. Diminishing retirement funds keep older workers from retiring, making little room for those coming out of school. While the best and brightest globally are still coming to the US for education, many eventually return home to prosper in their homeland. The reality is that workforces will increasingly compete globally for jobs, due to the flattening power of the Internet. Many have argued that the best way to compete in this new economy is by innovating and providing new opportunities and greater access for high-quality education opportunities.

Higher education has always been one undisputed gatekeeper for better jobs and socioeconomic status in both the US and around the world. For students from more affluent backgrounds or from families who have planned a lifetime for higher education, the current system works. These students go to solid, competitive schools, buy top brand books and materials, and land on their feet. There will continue to be such students and markets to meet their needs. However, there is a growing population of students who are struggling or unable to participate in higher education. These students include:

1. Working adults who lost their jobs and are returning to school, making tough decisions between tuition or feeding their families.
2. Students who traditionally qualified for loans or grants but are unable to acquire them due to shrinking federal or state funding.



3. Students whose parents cannot afford to send them to school or purchase materials to help them learn.
4. Students who are currently attending college, but who struggle by working multiple jobs or taking on a large amount of debt. (Indeed, student debt recently surpassed credit card debt as the number one debt load in the US.)

Working against these students is the ever-increasing cost for education, which has significantly outpaced inflation growth (Philips, 2011; Stern, 2011). The growing population of “forgotten students” is spurring extremely fast growth of used-book markets, free or reduced cost materials, and student groups who demand for more accessible and affordable education.

### **Connexions**

Connexions is one of the world’s first and largest Open Educational Resource (OER) projects ([cnx.org](http://cnx.org)). Connexions’ repository of free, open-source educational content is accessible to students, instructors, and authors worldwide. Since its founding in 1999, its impact has grown to millions of monthly users from every country connected to the Internet.

In Connexions, traditional textbooks and courses are unbundled into small modular building blocks that each deal with a single conceptual topic. These blocks can be combined and customized in different ways by a global community of students, educators, and practicing experts. All of the modular blocks and the underlying software platform are free and openly licensed in order to promote the broadest possible use and innovation.

Connexions supports not only outreach but also “inreach.” Content contributions are welcome from everyone, no matter what their academic pedigree, which brings great diversity to the content. Indeed, some of Connexions most innovative and highest impact content comes from so-called “shut-outs” who would not be welcome as authors in the conventional publishing world. Catherine Schmidt-Jones (a private music teacher from Illinois, USA) has contributed music theory textbooks that have been used over 21 million times to date. Sunil Singh (an engineer and parent from Delhi, India) has contributed high-school physics tutoring materials that have been used over 6 million times to date. Other examples of Connexions’ incredibly diverse content includes: early readers in Hindi and several Indian dialects, a K-12 curriculum for South Africa in English and Afrikaans, music theory, science and technology courses produced by a consortium of 40 Vietnamese universities, university textbooks, and project reports produced by undergraduate engineering students.

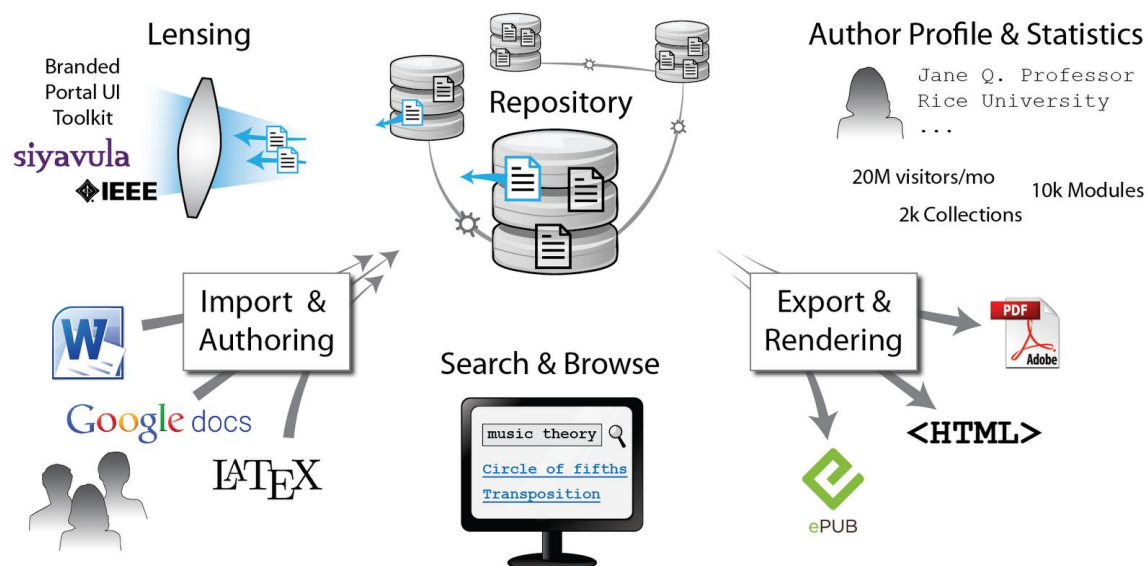


Figure 7 Connexions' Architecture

From the outset, the Connexions architecture included features years ahead of their time (see Figure 1):

**Modular, Lego-block organization** of educational content not only allows for complex nonlinear interconnections between ideas, but also makes the content easy to author, to update and keep correct, and to mix together to build a customized textbook. Today, Connexions hosts over 20,000 modules connected into over 1,200 e-text collections in over 40 languages.

**Semantic XML** markup of modules makes content use and presentation simple and flexible. Connexions modules can be displayed as an individual web page, woven seamlessly into many different courses, converted to PDF for printing or EPUB for viewing on a tablet or smartphone, or even processed through a speech synthesizer to accurately read material to the blind or illiterate.

**Collaborative workspaces** support communities throughout the authoring, e-text-building, and learning processes. Authors can contribute content in a variety of formats, including MS Word/Open Office and LaTeX; the source files are automatically converted to the Connexions XML markup.

**Inexpensive print-on-demand** editions from Connexions cost a small fraction of their counterparts from traditional publishers. (For example, the 627-page Collaborative Statistics textbook sells for just US\$26, while still being available for free online)

**Post-Publication Peer Review Lensing** opens up the editorial process to third-party reviewers and editorial bodies for post-publication review via a system of lenses (see [cnx.org/lenses](http://cnx.org/lenses)). Each organization sets the quality standards and review mechanism for their lens. Several professional societies have partnered with Connexions to review materials in their disciplines. The IEEE Signal Processing Society has set up a Connexions sub-committee to review and endorse electrical engineering materials (see [IEEEcnx.org](http://IEEEcnx.org)).

### OpenStax College

OpenStax College ([openstaxcollege.org](http://openstaxcollege.org)) is a new initiative of Connexions that aims to close the access gap by providing a library of 20 free, high-quality textbooks for the highest impact college courses. OpenStax College joins the innovative publishing features of Connexions with a rigorous professional content development and peer-review process to produce free

textbooks that are readable and accurate and that meet the scope and sequence requirements of individual courses. The textbooks will be complemented by the ancillaries necessary (lecture slides, test banks, homework systems) to make them a turn-key course solution for busy college instructors. OpenStax College started piloting its first five books in Spring of 2012: *College Physics*, *Introduction of Sociology*, *Anatomy and Physiology*, *Biology*, and *Concepts in Biology*.

OpenStax College addresses many of the common concerns surrounding OER today, including inconsistent quality standards, limited turn-key solutions, lack of coordination around core content, and no coordination with for-profit education providers. All OpenStax College textbooks are created by a team of professional writers, editors, active instructors, subject-matter experts and are reviewed by respected leaders in the field. The books are comparable with respect to scope and sequence coverage and development to other market leading texts, and since these books are powered by Connexions, they are free, open licensed, and re-mixable so that users can refine and customize the books to suit their individual needs. OpenStax College has partnered with several for-profit education companies to provide supporting technologies and resources such as online homework and assessment systems.

### **Bridging the Access Gap**

OER has great potential for saving students, educational institutions, and governments a tremendous amount of money. We estimate, for example, that if OpenStax College captures even 10% of the US market with the first five textbooks, an estimated 1 million college students could save \$90 million over the next five years. Reducing the financial burden of textbooks for the most at-risk students will allow them to shift their focus to learning and maximizing their career opportunities.

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## **How OERs can help a Strategically Important and Vulnerable Subject Area - Quantitative Social Science**

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### **Abstract**

The 2010 Royal Statistical Society campaign - getstats - and the Economic and Social Research Council in the UK identified a pressing need to promote the use and understanding of statistical data and quantitative methods (QM). Despite excellent research data infrastructure such as the Economic and Social Data Service and the UK Census of Population Programme, the ESRC recognise a QM skills deficit in UK Social Science. Attempts to improve data and statistical literacy have largely focused on developing good practice at institutional level and have revealed pockets of excellence in UK social science departments. Progress in 'capacity building' has been made at the postgraduate level and attention is now turning to the undergraduate level.

A UK based project 'Sharing OERs for Statistical Literacy using Real World Data', funded through the Open University's SCORE (Support Centre for Open Resources in Education) aims to find and share open educational resources (OERs) and good practice in those universities already working to upskill students in QM; and to focus on resources that address global issues by using real-world data. The resulting OERs will be accompanied by 'stories' or narratives of exemplar usage, derived from case studies from those engaging social science learners with QM. The focus will be away from economics and psychology which are the best served in QM in social sciences. The project, entitled 'Sharing OERs for Statistical Literacy using Real World Data' provides the subject of this paper.

The project builds on a series of case studies collected from academics in the UK who use real world secondary data resources in their courses, with data made available through the Economic and Social Data Service International macrodatabanks, provided by Intergovernmental Organisations including the World Bank, the IMF and OECD. Students and teachers reported that using secondary data in their courses helped improve employability skills. In turn this led to a project undertaken with the World Bank's Head of the Data Development Group to explore how educators in the UK use data in the classroom to give students real world skills, by introducing them to realistic problems accompanied by exercises with data. The work to date has predominantly uncovered good practice in economics and econometrics. The SCORE project seeks to take this further by extending this to other social science disciplines.

The paper will describe the case study approach taken, provide examples of good practice across a number of universities and departments in the UK including sociology, political science and criminology, and discuss the benefits of sharing good practice openly. The barriers to sharing OERs will also be discussed.

### **Keywords**

Statistical literacy; quantitative methods; social sciences; employability; real world data; skills; Open Educational Resources.

## Introduction

The use and reuse of Open Educational Resources (OER) has attracted significant attention since the term was coined in 2002 by UNESCO. Nonetheless, whilst significant amounts of activity, and funding, have been directed at the OER movement (see for example Stacey, 2010) it is still some way from being mainstream, although the early adopters may think that significant movement has been made in the right direction (Kernohan, 2012). White and Manton's iceberg metaphor for use and reuse of teaching resources (White and Manton, 2011) describes the practice 'above and below the water line'. Activity undertaken in the UK's Higher Education Academy and JISC OER Programme shows, unsurprisingly, that sharing does take place at subject level, where communities of pedagogic practitioners talk to each other about the teaching of their discipline (see for example OER Synthesis and Evaluation Report at <https://oersynth.pbworks.com/w/page/42051418/Phase2%20Cultural%20Considerations>) .

Over a similar time period, a parallel activity that has attracted policy attention is the teaching of quantitative skills in UK university social science departments. The background to the so called 'quantitative skills deficit' can be found in MacInnes (2009), but the stark message that forms the backdrop to the work reported in that paper is captured here:

Perhaps most important of all, an inability to handle quantitative information critically weakens graduates' capacity to be active, aware, informed citizens. No public debate of any importance takes place without a mass of accompanying statistics. Few of these may stand up to rigorous scrutiny. The kinds of skills good QM course can impart are fundamental to citizens' ability to distinguish strong from weak evidence in virtually any sphere of life.

MacInnes 2009; p.10

The Royal Statistical Society launched on the 10/10/2010 the *getstats* campaign to raise awareness of the benefits of statistics to all sectors of society, schools and higher education, media and politicians, employers and the wider public (Getstats 2010). In 2012 The Economic and Social Research Council and the British Academy funded a group of projects to address quantitative social sciences, which has been described as a 'strategically important and vulnerable subject area' (Hefce, 2008). Current work in the UK is therefore focused on producing more statistically literate students and citizens.

Within the context of each of the above disparate activities, the project sought to contact educators who use data in the higher education classroom in an endeavour to find examples of good practice across the UK. The national learning and teaching repository service – Jorum – which exists to assist in the finding, sharing, management and support of OER use and reuse, provides further context. Moreover the richness of the data landscape to social science students, as demonstrated through the socioeconomic data services, Economic and Social Data Service International (ESDS-I) and the Census Dissemination Unit (CDU) hosted at Mimas, University of Manchester, means that this may be a golden opportunity to encourage both QM use and the sharing of OERs among academic communities of practice. Certainly the data deluge (Carter et al., 2011, Thornton, 2011) ought to mean that there has never been a better time to get students to engage with real world data. Work in this combined space between 2008 and 2011 has resulted in a series of case studies and research outputs that provide evidence of the benefits of using real world data at the undergraduate level, including acquisition of employable skills (Carter, 2010; Carter *et al.* 2011).

The juncture of these 3 activities – OER, Quantitative Methods Teaching at undergraduate level, and a focus on real world data for engaging students to explore global problems, provided the opportunity for funding through The Open University's SCORE initiative. The project seeks to build on this cumulative work, and provides the context for this paper. The project runs from April 2011 to May 2012. This paper provides a snapshot of work undertaken to date, focusing on a single case study from a UK university in order to illustrate some of the issues in engaging students with statistical data and methods. The presentation to be given at OER12 will provide further information from some of the other interviews, as well as provide an example from the use of statistical data in Save the Children policy reports, and an overview of the course given to journalists seeking elementary data analysis skills.

### **The Project**

The project (described at <http://www8.open.ac.uk/score/fellows/jackie-carter>) has two aims:

- *To share teaching resources and expertise in those institutions already working to upskill students in QM; and*
- *To focus on resources that address global issues by using real-world data.*

The focus of the project was to provide evidence from social sciences outside economics and psychology (which are already the best surveyed subfields of the discipline) with the intention that resulting OERs would be accompanied by 'stories' or narratives of exemplar usage, engaging social science learners with QM. .

The project sought to find case studies of statistical data users across the sectors of society covered by the *getstats* campaign. Whilst the focus has been predominantly on Higher Education (HE) the project has also provided an opportunity to engage with real world data users in policy related occupations, and those in sectors such as the media who are in searching for stories based on the increasing availability of open data.

To date, semi-structured interviews have been conducted with the following organizations:

- UK Universities (5) – selected from those using data in the undergraduate curriculum to teach QM
- The third sector (Save the Children)
- RSS Centre for Statistical Education

And a training course given to journalists wishing to engage with data sources was attended.

### **The Case Study**

The case study provided here is taken from a UK university large social science department. Four lecturers kindly agreed to be video-recorded and the quotes below are extracted from those interviews. They explained that their approach to teaching quantitative methods is currently changing, that 2 of the lecturers are new and have been brought in to help address the QM skills deficit at undergraduate level, and they are at the start of a journey to address this area. Their willingness to be interviewed and recorded reflects the open and reflective manner in which they are inspecting their own teaching methods and sits well with the philosophy of open education.

All the lecturers are located in the School of Social Sciences; three are sociologists, one a political scientist (though not teaching his substantive subject). All four teach QM, as part of research methods courses, and all use data across the levels including with undergraduates; this varies from using data they collect themselves to available secondary data resources from ESDS (Economic and Data Service) and other sources. As one said:

*'partly it's about trying to get people to think about using secondary data rather than just getting them to do a survey themselves, and partly it's about giving them some data that's sufficiently large enough and robust enough to enable them to calculate a statistic'*

One of the interviewees, the political scientist, talked about their own experience of 1+3 post graduate training, as a result of which they had gained valuable data handling experience crucially access to lots of data, including 'longitudinal electoral data linked to geographies and large scale survey'. As a result they felt that they had

*'relied solely on my transferable skills'*

in coming to teach quants methods at the university. This lecturer tends to use their own datasets in lectures, but gives the students exercises based on readily available data, the rationale being that they introduce the concepts and students then get to work with real data that they haven't seen before. The issue of transferable skills is picked up below.

When asked about using global data, one of the respondents talked about getting students to look at local *and* global data (IPUMS International and World Values Survey) and macroeconomic data for multiple countries

*'so students get a real view of where Britain sits in a global context....it captures their imagination.'*

The same lecturer also uses census data to look at change over time, for example how ethnicity has changed in the UK in the last 30 years, although there was some debate about the value of these data due to their contemporary and developing nature. The lecturer who uses census data talked enthusiastically about a news story that had broken the previous day about self-reported ethnicity by generation, and had already decided to build this into her teaching as a way of getting students to think about a substantive subject and explore it with data. (This story covered by Mark Easton from the BBC (<http://www.bbc.co.uk/news/uk-15164970>) used data from the UK Household Longitudinal Study (UKHLS)).

The group discussed what appeared to be a 'disconnect' between teaching the method, e.g. how to do a Chi Squared test, and using quantitative data to explore a substantive problem, with some students reporting that they don't see the point in the former as they don't want to be a researcher (the course referred to was a core course for all 1<sup>st</sup> and 2<sup>nd</sup> years). The university is addressing this by

*'trying to make students aware of the potential benefits of knowing quants, to use in their substantive area'*

and giving students an opportunity to express their fears and frustrations about the use of abuse of statistics from the outset, but supports them throughout- and especially in the early stages - in terms of their use of data and statistics. The interviewees admit this is only a partial solution though and there is a way to go, not least because this level of student support is very time consuming. Their approach this year, as a result of new appointments, has been to try to do two things (i) to cater for all substantive areas covered in a generic methods course by using numerous examples from different substantive areas to keep all students

engaged and (ii) to get rid of as far as possible the ‘quants’ and ‘quali’ labels as this is not helpful; instead they are focussing on research design and how to become a social scientist.

This hands-on approach is designed to let students engage directly with data. To let them ‘get their hands dirty with data’ in order to appreciate that it generates an improvement in practical not just a theoretical skills. As one of the group said,

*‘you don’t learn much about research methodology by just reading books and writing essays, you do have to go out and collect some data, and you don’t really appreciate the craft of quantitative methods until you do a bit of recoding and see what difference it makes’.*

The group discussed the value of quantitative skills appearing to become more apparent to students as they get closer to graduation, even though QM are introduced early in the degree scheme. There was some discussion not only about how students can critically engage with the literature if they can’t understand it, but the same applying to staff. The university is now introducing joint supervisors on students’ dissertation projects in order to address the shortfall in QM skills among staff as well as students.

There was a short discussion on skillsets and attitudes to QM learning that social science students bring to their undergraduate studies. In an ideal world students would not have the allergy to maths and stats that is commonly reported; on the other hand students tend to enroll on social science degrees thinking they will not have to confront numbers. Consequently there was agreement on the need to ‘get them young’ and the desirability of working with schools to help students understand the need to engage with number and data even before they get to University. More than one of the group felt that universities have to give remedial help to students to give them some basic skills to get started, though others commented that this is a result of many students having not studied maths since GCSE level (aged 16).

When asked if they would consider sharing some of their teaching resources in open repositories such as Jorum, there was reluctance. They felt that because their teaching approach is changing to address the need to change the curriculum it was too early to share resources, and there was a sense of disbelief that others would find them useful anyway. Nonetheless they all thought sharing resources was a useful endeavour, and they were willing to consider this in the future.

## **Reflections**

The following themes emerged from the case study presented, and are drawn out here as they were reflective of work carried out elsewhere and in some of the other interviews not reported here.

### ***Secondary data use***

The use of existing large scale secondary data resources indicates the value in data sources made available through the services such as the ESDS, and echoes comments reported elsewhere (such as in econometrics teaching, see Paul Turner in Carter, 2010). There is a balance between helping students to collect data themselves and giving access to authoritative data sources.

### ***Global data for global problems***

The comment about helping students to investigate domestic issues in a global context concurs with approaches being used by others, see for example:



- LSE Case Study at <http://www.esds.ac.uk/resources/datainuse/casestudyteaching.asp?id=18> which refers to the LSE 100 Course: Understanding the Causes of Things ([http://www.lse.ac.uk/resources/calendar/courseGuides/LS/2011\\_LSE100.htm](http://www.lse.ac.uk/resources/calendar/courseGuides/LS/2011_LSE100.htm)); and
- the *Britain in a European Context* workshop resources at <http://www.ccsr.ac.uk/esds/events/2008-11-07/>).

### ***Contextualising statistics in the substantive***

The discussion about needing to have multiple examples to engage students with their substantive discipline presents a particular challenge. This is time consuming for lecturers. A bank of resources of ‘statistics in the news’ could be especially useful here, and could be co-created by lecturers, students and policy practitioners, and perhaps also the media. Some practice is emerging in courses but sharing of these examples is not yet widespread. Exercises around practical use of data could further support this across the social sciences. The RSS could help in this regard, as could possibly the BBC through their data journalist training. The getstats goodstats web pages (<http://www.getstats.org.uk/category/goodstats/>) are a step in the right direction but more needs to be done to present this information as reusable teaching resources.

### ***Employability and skills***

The comments on employability and transferable skills were particularly pertinent. One of the lecturers has come to his position through the ESRC’s QM postgraduate training route and as thus is already a success story for that investment. The transferable skills on offer to students using statistics at both undergraduate level (e.g. in dissertations) and postgraduate level have been reported in all the interviews on this project (and elsewhere, e.g. Carter 2010, MacInnes 2009). The interview (not reported here) with the Save the Children policy advisor stressed this aspect of his role – he had returned to university to acquire this skillset in order to enable him to undertake analysis of data for the sorts of roles he was looking for. Building a link between practitioners in real world occupations and students at university could be an opportunity to ‘make it real’.

### ***Sharing teaching resources openly***

This is the area that caused the most guarded response in the reported case study. However, since then the university has shared some teaching content in Jorum in the form of several sets of slides, which were compiled as a ‘featured set of resources’. Although this is only a starting point, it is successes of this nature that will hopefully encourage others to follow, and is a starting point for showing that OER can help quantitative social science teaching. Nevertheless the initial reluctance to share resources even from those with successful stories to tell around the integration of data into teaching demonstrates a key challenge to the sector. Critically it indicates that academics might view approaches to good teaching practice at the institutional rather than at the discipline area level. Likely changes in UK HE (e.g. differential fees between institutions offering similar courses) might not assist in these matters, and there remains a collective action problem in encouraging the uptake of OERs in strategically important and vulnerable subject areas.

### Next steps

The project will continue until June 2012 with further interviews planned. A presentation is being given at the RC33 Eighth International Conference on social Science Methodology in July 2012 (<http://www.acspri.org.au/conference2012>). The projects funded under the ESRC and RDI QM Initiative are also set to develop and share best practice in the sector; it is to be hoped that these projects will share OER as well as open educational practice as they develop. There may be lessons to be learned from another strategically important and vulnerable subject area – modern foreign languages – which has seen success in this approach as evidenced by the LORO project ([www.loro.ac.uk](http://www.loro.ac.uk)), through a targeted focus on community building and engagement.

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# **Identifying key elements for successful institutional and faculty collaborations in curriculum development using open technologies and open content**

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## **Abstract**

A major challenge for OCWC has been helping individual faculty as well as institutions find ways to forge effective collaborations to enhance curriculum development and implementation with open resources. The authors share their experiences from the past 2 decades of working with open technologies and open content that range from the classics to the health sciences with international partners.

The open software of the Tufts University Sciences Knowledgebase (TUSK) provides a platform for creating institutional networks, curriculum co-development, and local content development and implementation. To leverage valuable faculty time and expertise, it is essential for institutions to share content creation, curriculum development and delivery. Direct faculty-to-faculty methods across institutions include 1) content co-development - pairing faculty who teach similar areas to share content development and 2) curriculum co-development - sharing course development and co-teaching. The authors share multiple successful faculty-to-faculty and institutional networking examples that have used the TUSK platform, now a fully open-source, enterprise-level software that is being used or is planned for use by institutions in the United States, India, Africa, Sweden, Saudi Arabia and South East Asia. Started in 1995, TUSK was recognized in 2010 by the Association of American Medical Colleges, particularly for its institutional curriculum management capabilities.

The multifaceted open repository and tools of the Perseus Digital Library (Perseus), hosted at Tufts University, promote curriculum development and implementation internationally. Perseus has been a major open resource for the Greco-Roman culture since the 1980's, providing a rich, evolving digital repository for classical Greek and Roman collections, art and archaeology images, and user tools for students and faculty. As the leading provider of open source textual and linguistic data for Greek and Latin, Perseus's website serves a substantial audience - 884,000 visits and 9.6 million page views in November 2011 alone. Perseus's integrated reading environment combines source texts, translations, dynamically generated links to dictionaries, and language technologies that significantly enrich and expand the range of materials with which users at all levels can work. Perseus also provides the initial framework for a new generation of e-Portfolios that capture every form of contribution that students - and faculty - can make to increasingly complex "machine actionable knowledge."

Open source initiatives have gained significant momentum in the past few years. TUSK and Perseus, both as early open initiatives, provide examples of how open software, content, and methods developed at one institution can have impact on a global network of institutions and millions of users. These innovations are significantly changing how education and professional training are conceived, developed, delivered, managed, and sustained. We no longer are islands but are part of the global community that is creating, sharing, and reaping the benefits of giving and receiving.

## **Keywords**

Open Source, Health Sciences Education, Medical Education, Learning Management System, Knowledge Management System, Digital Libraries, Language Instruction, Digital Humanities.

## **Introduction**

A major challenge for OCWC has been helping individual faculty as well as institutions find ways to forge effective collaborations to enhance curriculum development and implementation with open resources. We will share our experiences from the past 2 decades of working with open technologies and open content that range from the classics to the health sciences with international partners. We will present brief histories of our projects, describe current initiatives, and share from our experience the common elements for successful collaborations at institutional and individual faculty levels, including how networks formed and what role open technologies played in encouraging sharing and reuse of open content. While the Tufts University Sciences Knowledgebase (TUSK) and the Perseus Digital Library (Perseus) are specific open systems that will be described, the lessons learned are generalizable for how faculty and institutions can promote co-creation, sharing, and reuse of open content for specific courses or broader curriculum development initiatives.

## **TUSK: Using open software as a platform for creating institutional networks, curriculum co-development, and local content development and implementation**

### **Who can benefit from TUSK?**

Any institution can benefit, but particularly institutions that are rebuilding whether due to post-conflict or natural disaster, or who are building new programs to expand training capacity. Using open software as a platform for creating institutional networks, whether south-south or north-south, enables institutions to share content creation, curriculum development and delivery methods, enabling institutions to leverage valuable faculty time and expertise, particularly in resource-limited areas.

### **What is the TUSK software?**

TUSK is a dynamic multimedia knowledge management system that supports health sciences faculty and students in teaching and learning. The TUSK platform, now a fully open-source, enterprise-level software, started in 1995 with a National Library of Medicine grant, and later received funding from the United States Department of Agriculture. The United States Association of American Medical Colleges recognized TUSK in 2010, particularly for its institutional curriculum management capabilities, and TUSK has received other national awards. TUSK provides rich user applications for learners, faculty, and administrators, including mobile access that is essential for supporting users in remote areas. Its searchable content repository, which uses the US National Library of Medicine's Unified Medical Language System as its controlled vocabulary, enables all health sciences disciplines to share one system for content development and delivery across a diverse university or network. TUSK also includes health science-specific tools such as curriculum reporting features, patient logs, a virtual patient simulator, assessment features and competency tracking.

### **Where and how is TUSK being used?**

TUSK is being used or is planned for use by institutions in the United States, India, Africa, Sweden, Saudi Arabia and South East Asia.

## **India**

TUSK's application in India at Christian Medical College (CMC) Vellore is particularly noteworthy for the scope and reach of its TUSK-supported network. CMC is one of India's top private medical colleges which includes dozens of allied health programs, including nursing; a complex network of over 200 secondary hospital clinics across all of India, many in very remote sites; and leadership in India's national curriculum reform efforts where CMC is a designated "regional node" responsible for faculty development, training and support of over 2 dozen other medical colleges in its region. All told, the CMC network provides care to millions of people, many of whom are underserved.

TUSK software was set up as an enterprise infrastructure at CMC's hub in Vellore beginning in 2006. This one system supports the medical college and a growing number of its allied health programs, as well as the faculty and students across its wide national network, many of whom previously had essentially no access to training and learning resources. Remote access is achieved mainly through mobile devices such as smart phones or laptops that use cell phones for connectivity due to the absence of broadband at most of these sites.

## **South East Asia**

As part of the RESPOND Initiative that in turn is part of the large USAID-funded Emerging Pandemic Threats Program, Tufts University is working with the South East Asian One Health University Network (SEAOHUN) that includes 14 institutions across Thailand, Vietnam, Indonesia and Malaysia. One major goal of the initiative is to create training programs across the network that will enable the institutions and countries to respond more effectively to the next pandemic - the next Avian Influenza, the next HIV/AIDS, or the next SARS. This will require not only development of training content and methods, but also development of effective communication and collaboration across the network to support rapid information exchange and coordination of response efforts. One approach that will support such communication, collaboration, and coordination across the network is to provide TUSK as a common infrastructure for content development and delivery. Plans are now underway to explore a pilot "hub" for SEAOHUN that can be built on as institutions are ready and as faculty are trained. Given the challenges of technical support, we envision the creation of "cloud networks" where institutions can purchase use of the tools as needed as opposed to being required to set up a full system on their own.

## **Africa**

Several faculty initiatives over the last 10 years involved TUSK-supported curriculum co-development across schools of medicine, public health and veterinary medicine in Africa. There are several recent initiatives ongoing in Africa. A collaboration of Tufts, Brown University, Yale University and the University of Ghana, funded by USAID/HED, will install TUSK at the University of Ghana School of Medicine. TUSK will house the medical school curriculum and the collaborators will co-develop curricula across multiple health sciences professions. Building on an earlier collaboration with Muhimbili University of Health and Allied Sciences (MUHAS) in Tanzania, Tufts worked with the University of California, San Francisco (UCSF) to install TUSK to house the new joint curriculum prepared by UCSF and MUHAS. TUSK is also playing a role in the RESPOND Initiative in the Congo Basin. The One Health approach requires building knowledge and sharing content across health sciences disciplines, which highlights a core strength of TUSK. TUSK is already working at Makerere University's Schools of Public Health and Veterinary Medicine in Uganda. Presently, Tufts is also internationalizing TUSK so that it can be translated into non-English languages. Through a partnership with Translators Without Borders, students at the University of Kinshasa in the Democratic Republic of the Congo (DRC) are translating the core words of the system into

French. A late spring implementation in 2 universities in the DRC is planned. Each member of a consortium of African Schools of Public Health and Veterinary Medicine in Kenya, Uganda, Tanzania, Ethiopia, Rwanda and DRC will eventually have TUSK so that the members can collaborate and build shared curricula across schools and institutions as part of the One Health Initiative linked to RESPOND.

### **How is TUSK changing health sciences education?**

Direct faculty-to-faculty methods across institutions include 1) content co-development - pairing faculty who teach similar areas to share content development, and 2) curriculum co-development - sharing course development and co-teaching. Content development includes sharing core content, the “building blocks” that can be enhanced and customized for local needs. This approach can be quite effective for enhancing or creating new courses, or for rebuilding a program after a disaster. At least in the health sciences, sharing of the core content is more desirable than sharing a full course “as is.” While there is much in common across courses, faculty generally feels a need to customize core content with local permutations and applications. Actual course co-development, where faculty from different institutions collaborate on co-developing an entire course, can be quite effective in increasing the quality of the course at both institutions and in building co-mentoring networks where faculty can learn new teaching methods from each other and support each other’s work. The course can either be taught concurrently where students from participating institutions enter discussions with each other, or can be taught completely separately, with lessons learned shared afterwards. When such content and course development efforts are scaled across multiple faculty in multiple institutions, you begin to create exciting possibilities for sustainable networks that can provide crucial safety nets in the event of any type of disaster that would temporarily cripple any institution(s) within the network. These types of collaboration are greatly facilitated by many technologies including Skype and other teleconferencing methods that are low cost and easy to use.

### **What are some key lessons from TUSK?**

The key ingredients for success in developing, using and sustaining open source-related work are having 1) higher-level leadership to provide administrative support (policies, budget, staff, etc.) and 2) faculty champions to engage and train other faculty. Technical requirements will become much less prominent as cloud services become available, and as mobile technology continues to grow, both of which TUSK is exploring. Requiring small fees for cloud services is one method for enabling a network to become self-sustaining. Content needs to be modular, flexible, and adaptable to local needs and requirements. TUSK’s robust content management system supports all these content attributes across all the health sciences. Time is precious for all faculty, so tools need to be easy to use, both in general access (e.g., via strong cellular networks) and in their intuitive usability. Functioning networks can be huge assets for institutions, particularly in low-resource areas or areas vulnerable to disasters. TUSK enables stable support of these large networks, particularly if cloud services can be established, and content is saved in multiple sites.

### **Perseus: Using a multifaceted open repository and tools hosted at one institution to promote curriculum development and implementation**

Perseus has been a major open resource for the Greco-Roman culture since the 1980’s, providing a rich, evolving digital repository for classical Greek and Roman collections, art and archaeology images, and user tools for students and faculty. As the leading provider of open source textual and linguistic data for Greek and Latin, Perseus’s website serves a substantial audience - 884,000 visits and 9.6 million page views in November 2011 alone. Perseus’s integrated reading environment combines source texts, translations, dynamically

generated links to dictionaries, and language technologies (e.g., morphological and syntactic analyses) that significantly enrich and expand the range of materials with which users at all levels can work. In addition, Perseus provides the initial framework for a new generation of e-Portfolios that not only display digital versions of traditional projects but also capture the working vocabularies language students acquire over time as well as every form of contribution that students - and faculty - can make to increasingly complex “machine actionable knowledge.”

The Perseus Digital Library began development in 1987 at Harvard University and moved, along with its director, Gregory Crane, to Tufts in 1992. Perseus has developed digital collections on a range of subjects but has particular strength in the primary sources, reference works, and art and archaeological data about the Greco-Roman world. Originally published on CD ROMs by Yale University Press, Perseus shifted to open access Web publication in 1995. The Perseus Digital Library maintains a web site at <http://www.perseus.tufts.edu>. Open source data from Perseus is described at <http://www.perseus.tufts.edu/hopper/opensource>.

Open access alone proved not to be adequate for our community - our colleagues wanted to more than simply consult the primary sources and reference materials that we had put into a machine actionable form. Our colleagues needed to apply their own analytical methods to the XML source files and then to create their own derivative works that reflected the annotations that they had themselves devised and added. For Classicists, such work is deeply traditional - all of our editions, commentaries, lexica, and scholarship build upon prior work, often quite directly. We formally adopted a Creative Commons (CC) license for our data in March 2006 and began to release our data as well as our source code. Five years later, in 2011, we went further and removed the non-commercial restriction, abdicating any claims on revenues.

Work that we have given away has been commercialized in the past in ways that we found problematic (most egregiously with academic units defending their new proprietary data and services with law suits) but this has not happened since the shift to a CC license with a ShareAlike provision. The shift to CC licensing accelerated our ability to collaborate closely with colleagues in the US and abroad. In the 6 years since we released our data under a CC license, we have managed funded collaborations with institutions in the United States and abroad such as Humboldt University, the University of Cologne, the German Archaeological Institute, the University of Cairo, the City University of Hong Kong, Imperial College, Mount Allison University, and Harvard University, with funding from the US National Endowment for the Humanities, the National Science Foundation, the Institute for Museum and Library Services, the Mellon Foundation, the Cantus Foundation, the German Science Foundation, and the UK Joint Information Systems Committee. Our data has been repurposed and enabled funded projects in the UK, Germany, Italy, and the United States with which we have had no formal ties. The CC license has accelerated, if not entirely made possible, a far more collaborative mode of work than we were able to pursue in our first 20 years of work.

By shifting to open CC licenses, we are far better positioned not only to work with students of Greco-Roman culture but also to begin developing a far more global conception of Classics, moving from a traditionally narrow focus upon Greek, Latin, and Greco-Roman culture and towards a model that views all cultures from the Atlantic to the Pacific as interacting components of interacting networks. But if we have begun to broaden our understanding of Classics as a field, the shift to a digital space has also challenged us to rethink - and arguably re-assert - our core mission as humanists. And that reassertion of our mission only strengthens the utility of open source publication. Medical schools educate the doctors who bring us into this world and keep us here as long possible. But where doctors



address the core biological needs of life, humanists have an opportunity - and for some of us, an obligation - to advance the intellectual life of society as a whole. Insofar as we specialize on some subset of the human record (as indeed we must), our task is to help that subset of the human record contribute as fully as possible to this large intellectual life. For those of us who work with the linguistic record of the Greco-Roman world, our job is to help Greek and Latin sources play the fullest possible role. Put in a more material form, our task is to get Greek and Latin primary sources, whether in modern language translations or in the original languages, into as many brains as possible as often as possible.

The CC license paid immediate dividends as it allowed us to attract \$450,000 in funding from the US Department of Education to expand our infrastructure so that it could work with Arabic. We produced in collaboration with the Alpheios project (Alpheios.net) the first open source reading environment for Arabic, including a machine actionable version of the most important Classical Arabic to English Lexicon, produced by Lane in the 19<sup>th</sup> century. Support from the Provost's Office at Tufts has allowed Perseus to introduce a course on Greek, Arabic, and Latin within the Classics curriculum and to lay the foundations at Tufts for a new Classics Department, one that includes not only Greek and Latin, but also Classical Arabic, Sanskrit and Chinese.

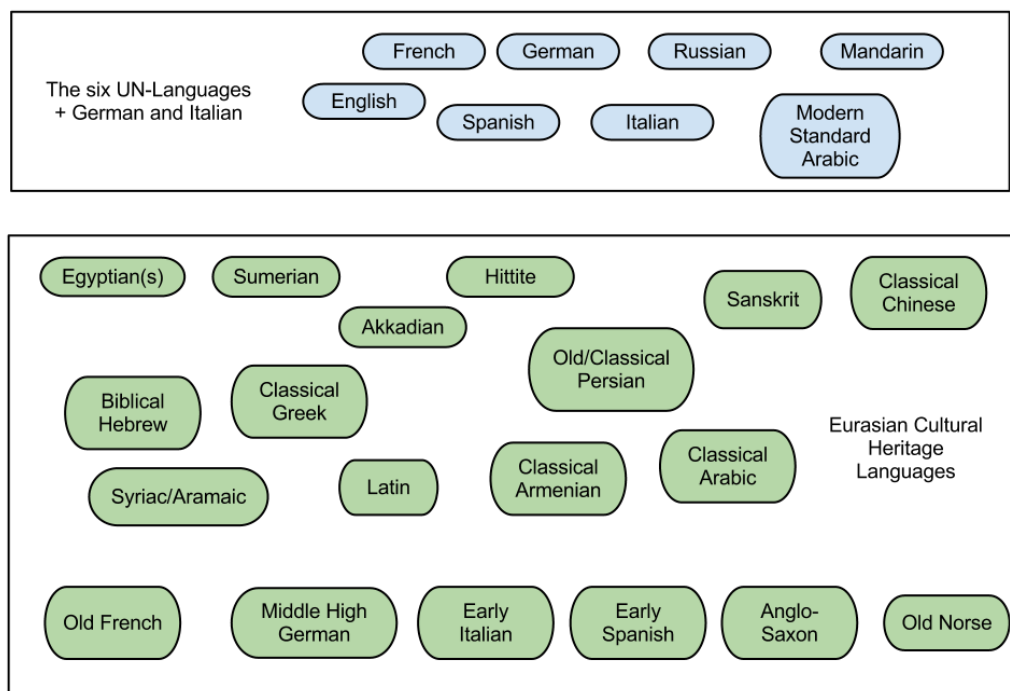
Even if we confine our focus to Greek and Latin, the amount of available sources and the potential audience have exploded. Analysis of the first million open source books downloaded from the Internet Archive yielded more than 2 billion words of Latin. This level of access is impractical, if not inconceivable, without an open content policy. Because institutions such as the Internet Archive have adopted aggressive open source policies, the internet public that now exceeds 2 billion and covers more than a third of humanity can now view at least 10 times more Greek and Latin than the most advanced researchers worked on a decade ago. This explosion in access has in turn changed the problems that specialists in Greek and Latin must confront. If billions of people can call up a text in Latin, the percentage of those users who can read Latin would be almost un-measurably small. Physical access does not confer intellectual access. How do we make our Greek and Latin sources both physically and intellectually accessible?

But, of course, we live in a world that is far more interconnected today than even in the 20<sup>th</sup> century, when broadcast media and air travel had, in the words of some, annihilated space. The intellectual and cultural processes set in motion during Greco-Roman antiquity - and these processes remain fundamental in politics, literature, philosophy, and religion - now interact in real time with processes that were set in motion by ideas expressed in the Classical forms of Chinese, Persian, Arabic, Sanskrit, and other historical languages. Figure 1 illustrates the challenges that emerge as we begin to think of human cultures as a network of interactions across time and space. Once we begin to think globally, even if we try to restrict ourselves to major languages preserved from groups between the Atlantic and Pacific (all of which interacted in some fashion over thousands of years), challenges rapidly emerge. Classicists are traditionally a cosmopolitan group and are expected to work with secondary sources in (as a minimum) English, French, German and Italian. If, however, we look beyond Europe and restrict ourselves to the official languages of the UN, we are working with eight modern languages - of which 1 (Russian) has been classified as a hard language and 2 as "super hard" (Mandarin, Modern Standard Arabic). If we then begin to enumerate major cultural heritage languages for which substantial remains survive, the number rapidly increases - the list below includes 19 languages but could easily be expanded.



A language infrastructure for global cultural heritage would, in the model below, need to manage 152 (8 \* 19) language pairs. The magnitude of this challenge becomes greater if we consider the need for ideas to circulate across modern languages. Not only should speakers of Chinese be able to work with materials in Greek and speakers of English be able to work with materials in Classical Chinese, but speakers of Chinese and of English should be able to share their contributions to Classical Chinese and Greek with each other, as well as with speakers of the other 6 languages listed below. This is not an abstract issue - the University of Cairo, for example, has a thriving department of Greek and Latin studies, but its faculty publications in Arabic are almost entirely unknown in Europe and North America.

Figure 1: Above, a Eurocentric view of modern languages that adds German and Italian to the 6 official languages of the UN; below, some cultural heritage languages in the network of cultures from the Atlantic to the Pacific.



Greek, Latin, and Hebrew emerged as the core cultural heritage languages upon which European scholars focused their efforts. While the relative importance of historical languages such as Greek and Latin has declined over the centuries, the relative focus of those who do study historical languages, at least in the United States, has not changed. The 2009 Modern Language Association survey of enrollments in US postsecondary language courses other than English identifies 70,291 students studying 36 cultural heritage languages from the Eurasian land mass. Of these, 54,123 enrollments - 77% - were in Greek or Latin. If we include Biblical Hebrew, the total number of enrollments rises to 67,545 - 96% of all enrollments in Historical Language courses were in Greek, Latin, and Hebrew.

The concentration of enrollments within Greek, Latin, and Hebrew means that these languages must provide the on-going US funding for what must become a much more general infrastructure for cultural heritage languages. It is important to emphasize the resources that these enrollments represent. According to the US Department of Education, the average college tuition in the United States for all postsecondary institutions, including lower cost 2-year colleges, was \$17,464 in 2009 (for 4-year institutions the figure was \$20,986). Even if we adopt the lower figure and assume that each enrollment in Greek and Latin accounts for 1/8 of a tuition bill, Greek and Latin enrollments account for \$119 million. If we add Biblical

Hebrew, the total rises to \$148 million. If we add the 28,884 fall 2009 Arabic enrollments, the fall 2009 investment in these languages reaches \$212 million per semester - more than \$400 million per academic year. That \$400 million provides the base funding from which institutions can support the study of these languages. The proprietary model has not delivered - and will not deliver - the open platforms that we need to deliver the education that we now wish to offer. The open source model provides us with a new opportunity to more directly support our core pedagogical - and research - goals.

The \$400 million tuition base ultimately provides the funding for sustainable infrastructure. An open source model allows our libraries to shift their resources from collecting restricted data from commercial entities and towards producing new data and the systems by which that data can play a critical role in learning and research. How important is a new open source infrastructure to accomplish the goals for which those \$400 million have been invested?

20<sup>th</sup> century print publications reached specialist audiences, passed through tiny networks of circulation, and were often, at least in the humanities, largely irrelevant to undergraduate education. We need a new, less fragmented intellectual culture that integrates teaching and learning both because our students learn better when they are contributing new knowledge and because we need to decentralize intellectual life. The volume of content now available online in Greek, Arabic, Hebrew, and Latin is far too vast for the relative handful of advanced researchers and library professionals. We find ourselves challenged to develop a new kind of pedagogy, one in which student researchers and citizen scholars play a critical role in analyzing the vast and exploding mass of digital source materials. This in turn has stimulated the beginnings of a new curriculum that is both a radical departure from 20<sup>th</sup> century Humanities practice and a reassertion of ideas with which Wilhelm von Humboldt and others developed the modern research university in the 19<sup>th</sup> century: university education involves the production of new knowledge and engages the intellectual life of society as a whole.

The shift to open data has accelerated two emerging and fundamental changes in Humanities education. Classics is significant because barriers to entry are steep and only those who had a PhD were, for the most part, able to contribute to 20<sup>th</sup> century Classical scholarship.

First, Classicists have always had reading lists of Greek and Latin source materials, but now in a digital space, these reading lists can be dynamic and customized to the interests of particular students. These reading lists can also provide feedback to learners and methods for self-assessment never possible before, and certainly not for historical languages for which living speakers are not available. These reading lists can also be published as part of e-Portfolios so that students who are not at well-known programs can document what they have mastered. Such e-Portfolios reflect a more general shift to assessment that depends less upon abstract (and often inscrutable) grades and upon the analysis, whether by machines or humans, of work that students choose to publish. e-Portfolios are not just a place to “publish” work and be assessed, but are also being used as active learning platforms.

Second, we see the re-emergence of editing as a central intellectual task within Classics. The scholars who produced our editions, lexica, commentaries, encyclopedias and other elements of infrastructure would immediately understand the goals that we pursue as we make primary sources intellectually accessible in a digital space. We have, however, begun to transform the practice of editing, with new forms of annotation, new knowledge sources and new services transforming what we can do with sources - we can actually work directly with primary sources in languages that we have not studied. Automated methods provide a starting point

but there is an immense new space in which student researchers and citizen scholars can - and must - contribute. The undergraduate thesis must become a machine actionable contribution available, if its quality merits, to a global audience if we are to make available the cultural record of humanity. Again, the implications of such a shift go well beyond Classics. If our undergraduates can contribute to our understanding of Greek, Latin and other challenging languages, they are well equipped to analyze the voluminous amounts of primary and secondary sources in English and other modern languages.

Open source publication has changed the potential relationships between teaching and research, research and society as a whole, and tuition and our emerging library infrastructures. Our students do not simply internalize existing information but produce useful new knowledge as they learn. Our research, no longer trapped in specialist networks, can now advance the intellectual life of society as a whole. And tuition now can pay for library infrastructures that do not primarily support advanced research but impact student learning from the first days at the university.

### **Conclusion**

Open source initiatives have gained significant momentum in the past few years. TUSK and Perseus, both as early open initiatives, provide examples of how open software, content, and methods developed at one institution can have impact on a global network of institutions and millions of users. These innovations are significantly changing how education and professional training are conceived, developed, delivered, managed, and sustained. We no longer are islands but are part of the global community that is creating, sharing, and reaping the benefits of giving and receiving.

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# **It Takes Two - delivering public health education to students in low/middle income countries: the effects of OpenCourseWare on teaching practices**

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## **Abstract**

There is an urgent need to increase public health capacity in low and middle income countries (LMICs). Workforce development through the provision of postgraduate public health education is one way through which this can be achieved. However, access to mainstream educational opportunities is limited within LMICs and the cost of courses providing post-graduate public health training in high-income countries is often prohibitively high.

People's Open Access Education Initiative (Peoples-uni <http://peoples-uni.org>) aims to build public health capacity in LMICs at low cost. It comprises a dispersed set of volunteers, with 'day jobs' in public health, academia and IT. With limited resources to build bespoke web-based teaching applications or design new educational materials, OpenCourseWare and other Open Educational Resources (OER) and an open source learning management system (Moodle) to support course delivery, provide a feasible solution. Peoples-uni has been providing courses using OpenCourseWare and OER since 2007. To date, 17 modules have been provided to over 240 students from 30 countries, with a high number from sub-Saharan Africa. Evaluation and student feedback suggests Peoples-uni is succeeding in its aim of providing accessible public health education to students in resource-poor environments and promises to further develop practitioners' skills and build capacity where it is most needed.

Throughout these four years of course development, tutoring and mentoring new facilitators, our teaching practices have been significantly influenced by some of the unique challenges and capabilities of delivering education in this way. This paper summarises the learning from interviews with facilitators across three Peoples-uni modules.

## **Keywords**

Public health; low-to-middle income countries; developing countries; volunteer; qualitative research; Open Educational Resources; OpenCourseWare

## **Introduction**

Most low-to-middle income countries (LMICs) face enormous public health problems that are impacting upon their economic development (Sachs, 2001). The burden of morbidity and mortality is carried by the 15-45 age group who are primarily the socially and economically productive group. In 2007, the UK government announced its commitment to support LMICs in tackling their public health challenges (Crisp, 2007). In its report, the government stated that it will be impossible to make progress against the goals of reducing child and maternal deaths and tackling HIV/AIDS, tuberculosis and malaria unless "*developing countries are able to take the lead and own the solutions – and are supported by international, national and local partnerships based on mutual respect*". It recognised the need for making knowledge, research, evidence and best practice accessible to health workers, policy makers and the public in these settings and the contribution of countries like the UK to the necessary scaling up of education and training to health workers.

The WHO, UNICEF and other international organizations have made major contributions to the training of health personnel in developing countries. However, most of these efforts have

focused on the training of junior health personnel on infectious disease control and maternal and child services, and not on public health professionals, i.e. public health workers with a relevant postgraduate degree (Rotem 1995).

Therefore, the need to develop a workforce of professionals skilled in public health is essential, but universities in LMICs that provide public health qualifications report being vastly over-subscribed for face-to-face education, especially for those courses that deliver at Masters level (Heller et al 2008). Fees for Western universities, including for distance learning and e-learning programmes, are prohibitive which limits the capability of both parties (practitioners in LMICs and providers in the West) to contribute to public health capacity building. For both local and international courses, the need to travel for this education may be both costly and inappropriate in the context of personal or geographical restrictions. In particular, this may limit access for women and those health workers on low salaries (Heller et al 2008). In addition, most education provided by providers in the West tends to focus on health problems that are a priority for those populations and therefore focus on solutions and models of service delivery that may not be appropriate to those working in LMICs. Other limitations have been identified in traditional approaches to public health training such as an emphasis on institution-based teaching with a lack of experienced field-based senior public health practitioners as role models (Beaglehole and Poz 2003).

The People's Open Access Education Initiative ('Peoples-uni') is a not-for-profit online learning course set up with the aim of providing contextually appropriate, internet-based public health education at costs affordable to health professionals in LMICs. The first module was piloted in 2007 and there are now 17 different modules available covering both the 'foundation sciences' of public health, and 'major problems in public health' with more than 100 students enrolled every semester. Modules are provided through an open source learning management system (Moodle), with application and enrolment processes, records and assignment feedback systems developed by volunteers. New students can create a profile, with their photo, contact email, profession and country of residence. Modules can be selected individually and together can lead to a Diploma or, since 2011, to a Masters in public health accredited by Manchester Metropolitan University. More than 100 academics and public health professionals from 19 countries form an international volunteer faculty.

It is the existence of OpenCourseWare/OER that has allowed Peoples-uni to be developed. To produce the materials required for 17 modules would have been impossible given the breadth of the topics covered and the part-time commitment that can be given by volunteer tutors. Peoples-uni, however, created a model in which OpenCourseWare is used across all its modules. Following a literature review of the competences required for our intended audience of health professionals in LMIC (Reynolds and Heller, 2008), we created a standard format across each module. A selection of OpenCourseWare and other OER designed to meet the competences required are given in five topics across each module. Students are directed towards these resources through online discussion forums facilitated by volunteer tutors, with each topic lasting two weeks. A recent paper on students' experiences indicate that on the whole students were extremely positive about the courses and the OpenCourseWare provided in particular (Awofeso et al 2012).

In this paper we describe the experience of a selection of Peoples-uni volunteer facilitators in delivering online public health education to people in LMICs using OpenCourseWare.

## Methods

We adopted a participatory action research approach to this study (Baum et al 2006): as module leaders for Peoples-uni, we were both researchers and participants so the study was for us both evaluative and self-reflective. In addition to exploring how OpenCourseWare and OER influenced teaching practices, we also had the explicit aim of generating ideas for further development of the modules and of improving teaching practices.

An interview schedule (available on request) was developed by 3 module leaders, and further refined in consultation with facilitators. Module leaders conducted interviews with 11 facilitators. Facilitators, like students, are also geographically dispersed (e.g. in the Evidence Based Public Practice module, 2 facilitators are based in London, one in Oxford, two in Australia and one in Saudi Arabia/Sudan), so interviews took place by telephone or Skype (n=10) or email (n=1). In line with the principles of action research, the interviews diverged from formal qualitative research; modules leaders did not simply interview but also took active part in discussions to generate suggestions for developing modules and increasing the effectiveness of the teaching.

Interviewers took detailed notes during interviews, recording where possible interviewees' comments verbatim. JS organised all interview notes into themes and undertook a thematic content analysis. All authors reviewed analysis to refine themes. In reporting quotes, interviewees have been anonymised and numbered 1-11.

## Findings

*Choosing to become a facilitator:* The facilitators interviewed for Peoples-uni were all in careers in education or public health. Their motivations for becoming facilitators varied. Some were primarily motivated by their interest in public health in low income countries. Some had direct experience either as members of a diaspora "I'm from there, I understand the situation", or having previously worked in LMICs. Others' experience was indirect, through working alongside people from low income countries. Interviewees were acutely aware of the urgent need for this type of education "because I am one of those people, I know how people are suffering to get this training".

Some became involved in Peoples-uni as an opportunity to develop their teaching, one viewing it as a "safe way to get into teaching". Only three of those interviewed had taught online previously and for some, the online nature of teaching initially posed a great, though necessary, challenge: "We need to expose ourselves to these technologies especially for a dinosaur like me who needs help to use the self-checkout in the supermarket".

*Being a new facilitator:* Discussion fora provide the main opportunity in Peoples-uni for students to develop their ideas through interaction with tutors and with each other. In each topic, a facilitator starts off the discussion by posting a question for all the students to respond to. As illustrated in the quotes in table 1, for most interviewees, their first experience of this was daunting:

Table 1. Experiences of posting as a new facilitator

*"I didn't have a clue what to do! I felt like it was a very different experience to what I'd had before. I'd been advised to set them off and then sit back – so I did this but then nothing happened so what do you do?"* (Interviewee 1)

*"I was like a guinea pig and was a little nervous about how I would be perceived through that posting. It was a case of wait and see."* (Interviewee 2)

*"I remember just one thing – could I generate sufficient discussion? This was my first worry."*

*Although I have some training in online facilitation I was worried that my threads and questions would not generate sufficient discussions to achieve the objectives of the course. I spent a lot of time to formulate the question, telling myself not to jump in to the discussion” (Interviewee 3)*

*“It was difficult not knowing the students as individuals – as I do when I teach face to face ...because I cannot gauge the student’s responses. In the ‘classroom’ I can see if a student is not understanding a concept and I can either help them there and then or make a note to talk to them later. This is not as possible with online teaching – especially if the students do not post anything.” (Interviewee 4)*

However, the capacity to capture and store discussions was a useful learning tool for facilitators as well as students, as one tutor commented about preparing for her first facilitation, “reading prior posts from tutors was very helpful.”

*Using OpenCourseWare:* The Peoples-uni website is kept intentionally ‘low-tech’ to enable students who may be served by low bandwidth connections to access the materials and contribute to discussions; there are no multimedia resources, and educational resources are available in a zip drive so students can download them all in one sitting. Whilst there is a live chat facility on Moodle, most discussion takes place on the static discussion forums, where new postings are emailed as a daily digest or individually to students.

All the educational resources on Peoples-uni are publicly available materials that have been carefully selected by facilitators or module leaders. In addition, two major medical journals have given special permission for the use of their papers. OpenCourseWare or other OER selected for each topic are intended to be relevant to students’ settings and to represent high quality evidence. Module leaders and facilitators do not just signpost students to the sources available on Moodle, but also encourage them to find their own.

As table 2 shows, facilitators valued OpenCourseWare welcomed the use of OER as a practical means of delivering teaching, partly because they do not have the capacity to create their own materials in addition to their day jobs. Some saw this situation as a temporary state and had aspirations to create resources in the future. Two reflected however on the effect that the expediency of using open resources can have on facilitators’ confidence in the longer term, though both have adapted their teaching practices to deal with this:

Table 2. Views on teaching using OpenCourseWare

*“I direct students to all of the resources on the website. I see this as one of the best things about Peoples-uni – essential for someone like me that I don’t have to write from scratch as don’t have time – but I know that we need to help people to find the right resources – or quality control them. The resources are great and really easy to follow.” (Interviewee 5)*

*“Open educational resources are great in that we don’t have to reinvent the wheel. I am teaching here something not core to my teaching skills so it’s at the edge of my line of vision. Using resources I haven’t developed can sometimes feel alienating. To have confidence in the materials, I have to shift the focus in discussions to my experience.” (Interviewee 6)*

*“[In face to face teaching] you feel the need to prepare some of your own materials to fill a session so you do a lot of work yourself to prepare and then feel confident because of that. In Peoples-uni, I don’t feel as prepared and it can feel woolly ... there is lots that isn’t in my area so I need to look things up.” (Interviewee 1)*

Despite the use of and signposting to carefully chosen OER on the Peoples-uni site, in some modules, facilitators commented that some students needed repeated prompting to use them:

“Do they look at all the resources? I often have to remind them to do that – quite often they start off without looking at them” (Interview 10). In addition, some students take time to fully appreciate the importance of using high quality sources of information and assignments commonly include references from Wikipedia or online newspapers.

*Maintaining students’ input to online discussion forums:* Facilitators initially reflected on the constraints of the discussion forum as a communication mechanism. Several echoed the experiences of facilitating for the first time, in the sense of suspense whilst they waited for responses (“I’m holding my breath at first. Are they going to have a problem?”). A couple noted that the lag between responses caused conversation threads to fizzle out in a way that did not happen as much with other technologies.

Interestingly, it emerged that facilitators did not on the whole, choose to use available technologies (eg mobile devices) in order to respond instantly to postings. This was partly due to time constraints – as most facilitators are either working or caring for children full time - but also because all of those interviewed expressed the perceived need to contribute with fully considered responses. One facilitator stated that she read up again on the relevant students’ profiles and found it helpful to see their photos before she responded. For others, the lag time was used for checking up on the accuracy of information before posting (“I could read up if I wasn’t sure”) though one noted this may give students a view of facilitators as being omniscient and may actually deter postings from those feeling less confident about their own knowledge:

*“On Peoples-uni I’m constantly looking things up before I respond. I think it makes things unreal as I wouldn’t be doing that [in face to face teaching]. Should I respond in a more real way? Modelling the kind of behaviour I’d expect? It is absolutely fine for a tutor not to know and to look up an answer – we don’t have to be an oracle. Maybe there is more room for ‘don’t know’ or perhaps to start my posting with ‘I didn’t know so I looked this up on...’”* (Interviewee 7)

As the module progresses, the proportion of students who contribute to discussions as well as the frequency of postings usually drops. Several facilitators expressed disquiet about whether students will post or post appropriately, about the reduction in postings and particularly about our lack of capacity to involve those who have registered with the module but do not post, for example:

*“The strongest are the most motivated and as a result they get more input and feedback. The ones that don’t really engage drop out of the picture. It’s really hard as a facilitator to bring them in. Posting a generic response [response designed to invite comments from wider audience] as a facilitator just generates responses from the same people.”* (Interviewee 8)

Another facilitator commented that if one student admitted to a lack of experience or knowledge, it acted as “a sort of ice-breaker and the others are more likely to join in”. One facilitator’s reflections on her own experience as an online learner, where she was a self-confessed ‘lurker’, illustrate how the perception that others know more can have a paralysing effect on students’ capacity to post:

*“I didn’t have time to read the materials, so I felt I already got left behind, I thought, ‘I can’t join in - I’m going to sound stupid if I say something. Everyone else is an expert’. So I became passive. It suddenly dawned on me though– ‘this is how they [my students] must feel!’”* (Interviewee 7)



However, this interviewee also went on to describe her experience as a student on this module very positively; she saved the resources, learnt at her own pace after the semester and continues to use the materials. Therefore, even though it is not possible to assess the impact on those students who do not post, they may also benefit from the module.

*Assessment:* Facilitators have a strong sense of altruism that motivates them to undertake this unpaid role in addition to their day jobs. This is compounded by their appreciation of students' lives and their different cultural context and the extensive knowledge they bring to the modules (see table 3).

Table 3. Views on students

*"I learn stuff every time I do it, it's amazing."* (Interviewee 8)

*"When I'm not marking the students, I think they are all wonderful! Some are beautiful and I've learned a lot from them. Virtually met some really lovely people through doing this."* (Interviewee 9)

*"I think you always give them the benefit of the doubt and remember the context of where they are working."* (Interviewee 2)

However, many students do not pass assignments on the first submission. Most facilitators articulated the tension between demonstrating empathy for students' often challenging circumstances and the need for rigour in their approach to assessing their final assignments. Facilitators were uneasy about the large number of students who struggle to reach the standard required for a Masters pass. Several described ways in which they seek to balance the need to maintain a standard for students confronted with a different learning style to what they had been accustomed to. They constantly reflected and sought to clarify assignment guidance that is provided to the students. All of those who fail on first attempt have the option to resubmit and as table 4 shows, facilitators sought to provide extensive feedback to those students.

Table 4. Providing feedback

*"Marking is the time I really do the teaching."* (Interviewee 7)

*"Usually I feel really bad [if I fail someone]. Don't want to crush them. Usually spend much more time on the fails than an easy pass. Tweak out something – support/good parts, what they can do to make it a stronger assignment."* (Interviewee 9)

While facilitators were sensitive to the circumstances in which some students were studying, as illustrated in table 5, facilitators were also aware they had to make the difficult distinction between genuinely difficult circumstances and lack of ability or effort.

Table 5. Balancing difficult circumstances with maintaining standards

*"I know these people have had really interesting experiences from my dealings with them. Writing an essay, putting that stuff together is not necessarily easy. Maybe they didn't get it completely. At the same time I'm not sure how much effort some go to. One was pretty slapped together."* (Interviewee 10)

*"At the end of one semester, war broke out in the Ivory Coast. Two of our students lived there and gun men came into their village. They sent me apologetic emails and asked for longer for the assignment, which of course was fine. It makes me sounds terrible when one submitted a month or two later, and the work was not good. I failed her assignment. I simply can't do the equivalent of the US college myth of 'roommate dies=pass'. I worked with her to get it through. But it's pointless and worthless to anyone's effort or time if it's not rigorous."* (Interviewee 9)

## Discussion

The themes emerging from our interviews with facilitators on the Peoples-uni illustrate some of the opportunities and challenges experienced teaching in this unique initiative. All of those interviewed were motivated to become involved by the aims of the Peoples-uni to increase public health capacity in LMICs. Online facilitation was a new and daunting experience for many and while some struggle with the spread and diversity of students, and the difficulties in developing a relationship at a distance, they all expressed their satisfaction and enthusiasm for most aspects of their role.

The Peoples-uni approach to standardising the use of OpenCourseWare and OER and applying it across each of the modules has provided a framework for OpenCourseWare to be identified and used appropriately outside of a higher education institutional setting. The interviews illustrate that the OpenCourseWare and OER— without which Peoples-uni would not be able to function - is recognised by facilitators as a major advantage of the Peoples-uni approach. However, the data from the interviews also indicated that as yet, there is still a gap between the provision of such resources on the site, direction to materials by facilitators and students' readiness to seek and use them. It is possible this gap is related to the standardisation of OpenCourseWare on the website, which may limit the range of materials that students are exposed to. Standardising the OpenCourseWare available has allowed modules to be developed, but many OpenCourseWare which might have been relevant to students, are not considered if they are designed to cover competences outside the identified module competencies, provided on different IT support systems or use video or multimedia that may not be accessible to students on limited bandwidths. However, as module leaders, we have not felt any major limitation in what we could cover content wise resulting from a lack of access to appropriate educational resources.

Alternatively, our finding that some students are not making full use of or accessing available OpenCourseWare may relate to a perception that these resources are not appropriate to their context; this is a potential area for further research. The development of OER and OpenCourseWare has predominantly been led by academic institutions within the USA and Western Europe. It has been suggested that one of the key potentials for OER is the ability to enhance and modify materials for local environments and purposes (Wolfenden, 2008). This links in with one of the aims for development within Peoples-Uni which is that graduating students would be able to become facilitators themselves and so tailor available resources for local environments.

There is a growing body of evidence considering ‘isolation’ and lack of social interaction from the students’ perspective and how this engagement impacts on learning (Swan, 2004). Previous evaluation of online learning through Peoples-uni points to the potential influence of student engagement on academic outcome (Philip and Lee, 2011). In undertaking this piece of work, therefore, we were particularly interested in how the relationship between facilitator and student was affected by the absence of face-face contact and this did emerge as a strong theme. However, less expectedly, facilitators also indicated that they missed the regular informal social contact and opportunities for debrief with other faculty staff often associated with face-to-face teaching. This interaction is more difficult given the geographical dispersion of Peoples-uni facilitators.

We acknowledge that the sample size on this study was small and may not be representative of other Peoples-uni volunteers. In addition, it is possible that facilitators would have been more prepared to give negative feedback or share concerns had the interviewers been individuals independent of Peoples-uni. However, the benefits of our approach using module leaders as interviewers has meant that we are able to follow up on ideas that emerged for developing our modules and for building more sustained engagement with students.

## Conclusions

The use of OpenCourseWare in Peoples-uni illustrates that lack of resources need not provide a barrier to providing valuable teaching and capacity building: OpenCourseWare and other open educational resources were valued by both teachers and students (Awofeso et al 2012). The selection and use made of these resources are reliant on skilled and experienced faculty members and this input is key to the impact of the initiative.

This work has been undertaken at a pivotal time in Peoples-uni development. It uncovered unexpected themes that will influence future delivery. For example, altruism and goodwill have been extremely important drivers to recruiting volunteers but this study also indicated that strategies for retention and development of valued volunteers may require building a sense of community not just for students but also for facilitators. It is our aim that further capacity building of the public health workforce using open educational resources will be achieved as students graduate and in turn become facilitators and module leaders.

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# Learning the Lessons of Openness

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## Abstract

The Open Educational Resources (OER) movement has built up a record of experience and achievements since it was formed 10 years ago as an identifiable approach to sharing online learning materials. In its initial phase, much activity was driven by ideals and interest in finding new ways to release content, with less direct research and reflection on the process. It is now important to consider the impact of OER and the types of evidence that are being generated across initiatives, organisations and individuals. Drawing on the work of OLnet (<http://olnet.org>) in bringing people together through fellowships, research projects and supporting collective intelligence about OER, we discuss the key challenges facing the OER movement. We go on to consider these challenges in the context of another project, Bridge to Success (<http://b2s.aacc.edu>), identifying the services which can support open education in the future.

## Keywords

OER, policy, open education, services, reflection, collective intelligence

## Introduction

A more open approach to learning is changing the way in which education systems operate and has the potential to change how people learn (McAndrew, 2010). Where content is released freely in a way where it can be reused and reworked, OER offers the promise of major changes. As Mike Smith of the Hewlett Foundation declared:

‘OER connects “education for all,” the UN’s millennium goal that calls for everyone in the world to have a basic education by 2014, with the goal of closing the digital divide’ (Smith and Casserly, 2006).

The promise that is aspired to in the foundational work on OER is now recognised in actions taking place across the world. However, wide interest is not itself enough to build new approaches and collaborations. We also need to understand what appears to be working and what effect innovations have on organisations and on learners. The world of OER is one where we need to monitor activities and spot the actions that people are taking and examine their impact, and to research the ways to design, measure and use resources in a more open way. Essentially, education needs to ensure that it also moves from “closed innovation” based on controlling ideas and being first to act, to more shared and collective “open innovation” where recognition is given to using internal and external ideas with the realisation that research does not need to originate with an organisation or individual for them to profit from it (see Chesbrough (2006) for a summary).

*OLnet* has applied that collective approach in offering a programme of fellowships, research actions and collation of evidence to address the need for greater sharing of research findings alongside the sharing of educational resources. Since 2009 nearly 30 *OLnet* fellows have been supported to work directly with *OLnet*, eight research strands have been developed, with lessons and challenges brought out and refined through a process of mapping the overall landscape and capturing real-world communication about the OER landscape. This has helped us prepare for a further stage of collective activity to apply openness in education.

The challenges are described below, together with examples drawn from *OLnet* and from the actions that are taking place more broadly. Open approaches are advancing rapidly, so we don't see these challenges as static (nor of purely academic interest). We examine a practical example drawn from the *Bridge to Success* project, which needed to provide open resources into a new context in a short period of time. Reflecting on the experience of applying open approaches leads though to a description of the type of services that may need to be put in place to meet the key challenges in a diverse variety of contexts.

### **The Key Challenges of OER**

One of the significant achievements of the *OLnet* project in its final year has been the identification and ratification of a new set of key challenges for the OER movement through the OER Evidence Hub (OER Evidence Hub, 2012; De Liddo et al., 2012). Earlier work (including analysis of reports from previous recipients of funding from the Hewlett Foundation under their OER programme) had identified key areas and themes which were drawn upon in the creation of the collective intelligence data model. In turn, the seeded content on the Hub – literature studies, news articles, journal papers, presentations, anecdotal evidence – was analyzed and classified with relevance to ten key questions. This list was circulated back to the OER community for comment and refinement (De Liddo, 2011) leading to an extended list of twelve key challenges. In addition to validating the OER Hub as a tool for collecting and making sense of research data, this list of key challenges provides a useful way of framing achievements and future challenges.

#### *1. Creating new appropriate assessment/evaluation models and practices for OER*

One of the challenges facing the OER movement is finding an effective way of integrating learning analytics into assessment (Lovett *et al.*, 2008). Tackling this challenge could enable many of the beneficial aspects of Open Learning by offering alternative ways to demonstrate learning that are independent of particular sources or methods. Wiley (2011) suggests that a bank of assessment (sometimes termed Open Assessment Resources – OAR) could be established that is at such scale and range that individual challenges can be proposed to suit almost any situation. Steps toward this may be to build different pedagogical patterns of assessment tasks that encourage individuals to take control of their own learning. An automated approach to marking assessments risks over simplification and may miss the actual challenge of learning, or alternatively require an abundance of worked answers so the difficult but essential learning process of facing the challenge is missed out. A long history of tutor-based assessment has shown that good feedback is more important to the student than the raw mark, and that such feedback is typically time consuming to produce and hard to support.

In assessing and evaluating learning the issue is not so much the production of “open” content, but how to connect the wide range of existing content through to learning activities. Learning is a complex process, and the acquisition of new knowledge and skills is often challenging. The gratification of the learner may be delayed until a solid grounding for building further knowledge is available. Assessment driven learning may be an artefact of existing requirements for proof of learning rather than the learning that meets authentic needs, particularly in informal contexts. However, the addition of external assessment can act as a catalyst to turn intentions into motivations and structure them into learning activity and in the concept of badges (Mozilla, 2012) a hybrid of activity and reward is starting to appear.

#### *2. Technologies & infrastructure needed/in place to help the OER movement*

Many technology-driven solutions now present themselves to the aspiring OER educator, including tools for improving discoverability through search engine optimization and

metadata; for publishing content and assessing learning. Broadly, we distinguish specific solutions that are designed to support OER from wide-access systems designed for other purposes that have been appropriated for use in education and learning. In the first category of specific solutions to the OER challenge examples include OpenLearn (2012), Connexions (2012), OERGlue (2012), P2PU (2012) and OpenStudy (2012). OpenLearn's LabSpace provides its facilities to all users and allows downloading of content, uploading content, setting up learning clubs, building paths, journals, forums, video-conferencing and more as a fairly comprehensive approach to the needs identified by OpenLearn during 2006-2008. Since then it has proven its value in supporting other projects that need such a space, but has too much complexity for individual users. OpenStudy focuses on solving one problem: where can learners talk to other learners about topics raised by OER. OpenStudy offers other sites the opportunity to embed or link in to a unified place for discussion and for learners it gives the critical mass of people talking about the subject in which you are interested (Ram, Ram & Sprague, 2012). In the second category of accidental OER software can be found such services as Slideshare, scribd, YouTube, iTunesU, and Flickr. These were developed to meet other needs but have emerged as good places for sharing and with a strong community of educational users. Some of these also now help to spread the openness message through their support for Creative Commons (CC) licences.

Ideally, the platform for the providers of OER would be to offer of multiple content input and multiple content output formats, supported by clear licensing, tracking all use of content, providing easy tools for customisation and sharing back, enabling very easy resource discovery, revealing the options for how the resources are intended to be used and how they actually are used. One of the key requirements for OER for the user is its "invisibility" as part of the range of resources. This means that OER needs to be flexible and seamless across relevant content and assessment as required, integrated into both curriculum and the learning experience.

### *3. Institutional policies for the promotion of OER*

As take up of OER becomes more widespread, then the decisions made to support them and share the ways forward need to be shared and understood. The "policy" level can be a very efficient way forward by setting an agenda that openness works towards. At the institutional level this can be important to help cross the chasm between isolated innovation and the mainstreaming of innovative approaches.

The last year has seen some important policy developments for OER, with a number of national and federal bodies moving to legislate in support of OER. Notable examples include the OER K-12 Bill in the USA, the São Paulo Department of Education's mandate for BY-NC-SA licences on educational materials, the Indonesian Ministry of National Education's mandate for open textbooks, and the OER movement in South Africa. Political changes like these reflect the growing momentum behind the view that "all publicly funded resources are openly licensed resources" (Wiley, Green & Soares, 2011).

In broad terms, policymaking that changes goals and metrics can have an important scaling effect. However, it should be recognised that policies are limited as tools for promoting innovation. Indeed, those who innovate may well be those who do not feel bound to follow restrictions of policy and find ways around it. Policy can also be very bound to contexts, and so the sharing of the policies themselves of more limited value than might be hoped. OER communities are diverse, and policies need to reflect different cultures and needs just as repackaged OER must be appropriate to context. Policy is also susceptible to being reversed by changes to that policy, such as with the TAACCCT Federal Grant Program (Keller, 2011).

While some policymakers are contributing to frameworks that support OER as it goes main stream, others may attempt to ameliorate changes to existing business models. Copyright remains a contentious issue, and anti-piracy bills similar to the proposed Stop Online Piracy Act (SOPA, 2011) could still have an adverse effect on sharing.

#### *4. What evidence is there of use (and re-use) of OER?*

While finding evidence about the use of OER remains a challenge, it can be argued that a clearer picture of the world of OER is coming into focus. The OER Evidence Hub is pulling together data from a range of sources to support the arguments of the OER movement. Although by its very nature OER use is often difficult to analyze, OER projects need to do a better job of recording successes and providing evidence about reuse and reappropriation.

Any lack of reliable evidence might be viewed in one of three ways: that there is in fact little reuse; that there is reuse but it is not visible; or that the accepted definition of reuse is not a useful one and we should focus on value to the user rather than be concerned with labelling particular instances of activity. We need to encourage the use of learning materials which allow for attribution when content is remixed or repurposed. Tools like OER Glue have shown how digital platforms can support the process of creating, evaluating and linking OER into course structures. But designing courses for re-use requires a culture of sharing and collaboration (Ossiannilsson & Creelman, 2011). Technological solutions alone will not be sufficient; educators need to adopt a more positive outlook to using and sharing educational resources for OER to become truly main stream.

#### *5. What can be done to improve OER sustainability?*

Governmental bodies are now beginning to tentatively fund OER on the grounds that the public should have access to research and educational materials which they have funded through taxes. This is a big step forward from a policy perspective, but there remains a danger that this kind of funding will be reduced as OER curricula are fleshed out and legacy OER grow. While OER advocates may be winning arguments about the best way to spend public money on educational materials, the long-term sustainability of OER remains the focus of research. The majority of OER are still produced by philanthropists, colleges themselves, and the efforts of faculty (Hampson, 2011). Dependence on philanthropy is unsustainable, and runs the risk of affording donors too much influence over curriculum production. As financial pressure on (especially higher) education increases, faculty may feel that the extra efforts of producing OER are unwarranted while educational institutions are likely to reallocate funding for OER production from other areas.

It's important to distinguish issues of sustainability from questions about business models. If we treat sustainability purely as a problem raised by the "free" element then we overlook the fact that sustainability often depends on recognising those benefits brought to other parts of a business or indeed broader benefits to the overall ecosystem of education.

#### *6. Copyright and licensing*

A range of Creative Commons licences have been firmly associated with openness and OER for some time now, and in light of recent policy successes it might be tempting to think that the licensing problem is solved. Indeed, in many contexts and scenarios, highly effective licensing arrangements are already in place. It is important to bear in mind that the CC-BY license does not restrict the commercialization of "open" content (Green, 2011). Commercial providers (including Apple and Amazon) have shown interest in the e-book and textbook markets, using the savings made through digital textbooks to preserve market share. Advocates need to continue to make the argument that e-textbooks and open textbooks are



fundamentally different, and that subtle differences in licensing agreements can have profound implications.

#### *7. What are the costs and benefits of using OER in teaching?*

One of 2011's most visible interventions in the world of OER was the impact on school and college textbooks in the USA. Through initiatives like Utah Open Textbook, Students PIRGs Textbook Rebellion and the \$5 Textbook, college students were able to experience the significant cost savings offered by OER. Textbooks normally costing hundreds of dollars can be provided for free online or between \$5 and \$30 for physical copies, resulting in widening student participation and improving access.

Further research is needed into the ways in which the shift to OER can support deeper learning while contributing to cost savings. OER also has the potential to change the learning experience itself, especially in terms of supporting formal, institutional learning and informal, often self-directed learning. Open material designed for open learning, such as that from The Open University's courses published on the OpenLearn website, can be used to support the broad spectrum of subjects taught at undergraduate. The OERuniversity (Witthaus, 2012) has proposed a collaborative approach to providing accreditation for such learning at much lower cost to the institution and to the learner.

#### *8. Promoting and advocating educational methods which use OERs*

2011 was a successful year for OER advocacy, with important breakthroughs in a number of areas (particularly policy). The successes of the OER Advocacy Coalition are in part due to a diverse team of advocates working effectively across political and geographical borders to build communities, co-ordinating and sharing their activities (Google, 2012).

While this advocacy movement has raised awareness of OER and made a significant impact on policymakers, it should be noted that commercial publishers and other interested parties continue to make attempts to ameliorate legislation which supports OER. There remains a crucial role for individual acts of advocacy which can spread the OER message into new areas of application in teaching, learning and research. However, few staff feel incentivised to contribute to OER. (This can result from seeing the demands of OER production as extra work or from reluctance to share intellectual property other than in accordance with traditional forms of dissemination.) Institutions need to take a lead with developing skills in instructional design and educational technology among staff in all faculties, though there remain questions around how best to engage and incentivise.

#### *9. How do we ensure OER is of high quality?*

All educational materials must meet accepted quality standards, and the so-called "quality" problem is not unique to OER; rather, OER partakes of it on account of being *educational*. Furthermore, the uptake in OER use is indicative of a growing acceptance of the idea that OERs are not necessarily of a poorer quality than commercial equivalents.

There is also evidence to suggest that OER are challenging accepted notions of quality through developing and implementing resources which are more relevant to the way that learners will engage with curricula in the future. Traditionally, the production of educational resources was restricted in terms of both production and consumption. OER, by contrast, can be produced through frameworks in which "various types of stakeholders are able to interact, collaborate, create and use materials and processes" (Kanwar, Balasubramanian and Umar, 2010). Hence, under the open model it is not only scholars who assess the quality of OER.

#### *10. Creating the right culture of teaching and learning to improve OER adoption*

In some ways this challenge is the mirror image of the issue of advocacy, since it concerns the attitudes and values of educators *in situ* rather than at the removed level of policymaking. Many state education agencies now have offices devoted to identifying and using OERs and other digital resources in their states. To help states, districts, teachers, and other users determine the degree of alignment of OER to the Common Core State Standards, and to determine aspects of quality of OER, Achieve has developed eight rubrics in collaboration with leaders from the OER community (Achieve, 2011). In Europe, the OERTest project has provided a series of briefing papers for OER assessment and good practice (OERtest, 2011). P2PU is currently developing a model which wraps assessment around the content it provides, effectively embedding it within the OER itself. The P2PU model also provides volunteer tutor support to learners in a cohort (P2PU, 2012).

#### *11. Improving the value and impact of OER research*

Can OERs find a place within existing academic cultures of research, teaching and publication, or must they forge new networks and processes for disseminating knowledge? While there remains a considerable numbers of scholars who are sceptical about the value of open research, open systems of peer review and open access publishing are increasingly becoming accepted, with many academics expressing frustration with existing models (see Boyd, 2008). Although open educational practices can disrupt established patterns of action, an ascendant “culture of openness” is promoting cross-fertilization of ideas between different stakeholders and opening up new opportunities for research collaboration (Nielsen, 2011). Research on openness can thus itself be a catalyst for change. The *OLnet* project has acted as an exemplar for a culture of networking and openness towards OER adoption, supporting a number of fellowship schemes and building closer links between institutions and individual educators in discovering new ways to network and research in an open world.

#### *12. Improving access to OER*

Widening participation in education remains a core driver of the OER movement, and each of the other challenges can be understood as attempt to improve access. There have been encouraging policy developments, and considerable progress has been made in the USA with student textbooks over the last year. There remain, of course, significant barriers to OER, including discoverability, publishing models, technical standards and lack of relevant skills. Nonetheless, around the world there is a growing recognition that OER can make a real difference to access. Within the context of *OLnet*, Teacher Education in Sub-Saharan Africa (TESSA, 2012) brought together teachers and teacher educators from across Africa, offering a range of OER materials in four languages to support school based teacher education and training. It provides a good illustration of how OER itself can be a route to improving participation and widening access by crossing cultural or geographical boundaries.

### **Meeting the Challenges: a Case Study**

The *Bridge to Success* project (B2S, 2012) offers a good example of how many of these challenges arise in practice. By reflecting on the services that need to be provided to such a project we can help share experiences and prepare for the needs of similar OER projects. The B2S project aimed to introduce content and approaches already applied at The Open University to the US Community College context (Law *et al.*, 2012). The courses were designed to help learners prepare to enter degree level courses and had been demonstrated to be effective in improving attainment for students who lacked the standard qualifications for higher education study. Two courses were selected and these are now available in new versions as “Learning to Learn” and “Succeed with Math”. The courses were not previously

fully available as OER and indeed were designed around print and telephone support models to meet the original target audience.

The challenges can usefully be divided into four categories, each containing three challenges. First, there are the challenges of **preparation**: copyright, technology and access. These have potential solutions and so can primarily be addressed through a process of selection, and will be discussed in more detail below. Second, there are three **common issues** for learning: quality, sustainability, and reuse. These are a hybrid between applying existing processes, such as in B2S the use of the *Quality Matters* framework already in place in the partner Community Colleges, and of considering the specialised concerns of openness. The third group are areas for current **research**: cost/benefit, impact of the research and policy. These become the focus of the reflection and approach to evidence within the project itself. The fourth category includes the **emerging** areas of advocacy, culture and assessment. These are not so much the focus of B2S itself but are very much part of the rationale for the OER movement of which it is a component. B2S contributes through take-up, demonstrating ways in which openness aids flexibility and take-up, crossing cultural boundaries internationally and between learning sectors, and opening up a more flexible approach to assessment and attainment.

### Preparing for Openness

Each of these categories could be examined in more detail. We will concentrate here on the three challenges within the first group (preparation) and look at how they indicate a way forward based on the services and support needed for working on open projects.

*Copyright:* for B2S we have mandated use of the CC-BY licence (Creative Commons, 2012). This is now the most popular licence for OER as it allows wide use without additional clarification while retaining reference back to the originator but not insisting on imposing a “sharealike” condition that could inhibit remixing with other material with a more restrictive licence. For some cases the non-commercial (NC) licence is preferred as it extends a message of free of cost use and avoids potentially misleading representation of open content. The particular challenge for us as a partnership was to match the existing preference of NC by The Open University to the use of CC-BY across the funded projects. This example serves to highlight accepted choices where issues still need to be understood.

*Technology:* B2S was prepared to consider other platform choices but selected the existing LabSpace provided as part of *OpenLearn* from The Open University (a Moodle-based system). This has proved to be strong in supporting multiple versions of content through a shared editing approach and direct support for learners. While the platform was developed some time ago, it proved well suited to the B2S case which required reuse, both cohorts of learners and open learning, and the ability to provide tracking data.

*Access:* in B2S there are access challenges of discoverability and accessibility. Discoverability is addressed by siting content with other OER and by identifying and working with appropriate pilots. Accessibility is particularly important in the context of material that is not only open for use but part of an offering to identified students. Specialist workshops considered approaches while a process of developmental testing by the accessibility team attached to The Open University’s Institute of Educational Technology identified issues. An important side effect was to reconsider the features of the underlying LabSpace platform and recognise that revisions could be prioritised and then implemented. Making platform rather than content changes to improve usability and accessibility has brought benefits for all users not just those working with B2S content.

## Services for Open Education

Open Education clearly has its challenges, some of which we are starting to know how to overcome, others of which are emerging as the field progresses and increases its ambitions for change. In working across *OLnet* and applying what we have learnt in B2S one can identify the range of services that are needed, and the collective way in which they might be met. A tentative list of such services and the way they interoperate is given below.

1. *Supporting the practicalities of OER.* To provide expertise or routes to expertise for technical, management and processes associated with the successful conversion of course material to OER, and the routes to adopt and make use of them.
2. *A technology base for OER.* There is recognition that there is a need for underlying technology and shared platforms. Existing work needs to be revisited and enhanced to provide an immediate answer to project needs.
3. *OER courses and web presence:* draw on the experience of projects such as Bridge to Success to provide best practice and advice on running pilots, surveying instructors, students etc. Support through development of the instruments and technology needed but also by packaging up knowledge into courses e.g. within the School of Open.
4. *A Fellowships “Plus” programme:* the fellowship approach has been very successful both in *OLnet* and the UK-based SCORE. Extending the concept to offer greater persistence through the development of research nodes that link back to shared support and then reach out to the local environment.
5. *Collective action on a regional or sector basis.* This may operate as an extension of the fellowship model but at an institutional scale. The open collaboration that is possible around OER means that connections do not all need the same funding source, or the same motivations, to work together.
6. *The OER Evidence Hub:* the hub developed by *OLnet* shows the potential and interest in a shared research base which links practical outcomes and data from a range of projects and initiatives. Evidence about OER needs to demonstrate validity through collective intelligence, curation and peer review, while remaining open to contributions and use by all.

As decisions are made to adopt OER practical guidance is needed and key factors can be identified with reasonable confidence. The findings highlight the potential for impact of OER on policy and on practice in education but also confirm weaknesses in the evidence base. In order to help new projects and initiatives to make good choices as they work with Open Educational Practices, the way forward is to accept some of these partial pieces of evidence while making their basis clear and understanding the contexts in which they can apply.

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## **Learning to work with Open Educational Resources**

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### **Abstract**

The professors of our University are learning to work with a new mentality, thanks to the support of OCW in High Education.

When the OCW Project started in the University of Cantabria, there were few professors who had knowledge about the open educational resources or about their possibilities. Step by step we were publishing different courses, but without use all the possibilities of New Technologies in Education. With a lot of effort by the Area of Quality and Education Innovation it was possible to change the perception of Open Education in our University.

### **Keywords**

Education, Professors, Innovation, New Technologies, Quality, Open Educational Resources.

### **1. Development of OCW in the University of Cantabria (<http://ocw.unican.es>)**

Nowadays, our University has more than 120 courses published; some of them are only text materials, but others are real virtual courses, with a lot of different resources (HTML, Flash, self-learning materials, etc.). Nevertheless, the quality of the materials is as important for us as the satisfaction of the professors who make them. There are a lot of professors yet who do not trust in the virtual education, but OCW can be the way to know this new world of possibilities.

In our University we are working in two different ways: the individual work of every professor; and the common work with several faculties (Nursery, Economics, Mines, Business Administration, and Energy Resources).

#### **1.1 Individual courses**

In the individual work, every year we make a call for new courses. Professors have the support of the OCW Department, and we seldom have problems with them, because they are the most interested in the project.

Every year we have had between 20 and 30 applications of participation and all the agreements have resulted satisfactory.

Perhaps, the most difficult aspect is to convince the professors that a digital publication is completely different than a traditional paper publication. In our Department we encourage professors to exploit the possibilities of New Technologies and to add videos, animations and self-learning activities.

I want to talk especially about one course in our OCWsite: Biogeography. This course is a full description of the different environments of our planet and of their recent evolution in relation to human activities. So, the course is more than a traditional description of the environments, including the human factors. During the publication of this course, we had the

complete help and advice of the professor; we spent a lot of days correcting texts and uploading original images of all kind of environments all over the world. But, this course is especially important because of the huge number of resources it has: field practices, auto-evaluations, videos, links to Google earth, crosswords, texts in HTML and pdf, flash animations... This is the best example of what it's possible to do if the professors want to innovate and have the help of a technological department.



Image1: <http://ocw.unican.es/ciencias-sociales-y-juridicas/biogeografia>

## 1.2 Full Degrees

When we are working with the Faculties, it is possible to have more problems. We make a global agreement with the Degree and all the teachers have the obligation to participate. Sometimes, there are professors that do not want to collaborate. Nevertheless, the work of our Department has gone well, because in the five degrees we only have four courses that haven't been published.

For every course published, the professor gets a remuneration of 500 euros and the same for the faculty. So, a faculty can get until 5.000 euros every year for its participation in OpenCourseWare. It's not, obviously, a big quantity but it helps to implicate the faculties in innovation programs.

In 2010 we began with two Degrees. Now we are working with five full Degrees: Mines, Energetic Resources, Economics, Business administration and Nursing. The problem is that in some cases it is very difficult to persuade professors to publish their courses. Nevertheless, we believe that it is better to work only with the professors who want to participate voluntarily. The results are always better with them.



## 2. Impact of OCW

In 2007 we only had 2,000 visits a month. Now we have more than 70,000 visits a month and rising. Likewise, we know that the courses are used by professors, students and self-taught people all over the world. Although we are one of the smallest universities in Spain, we have one of the best results in visits to our website.

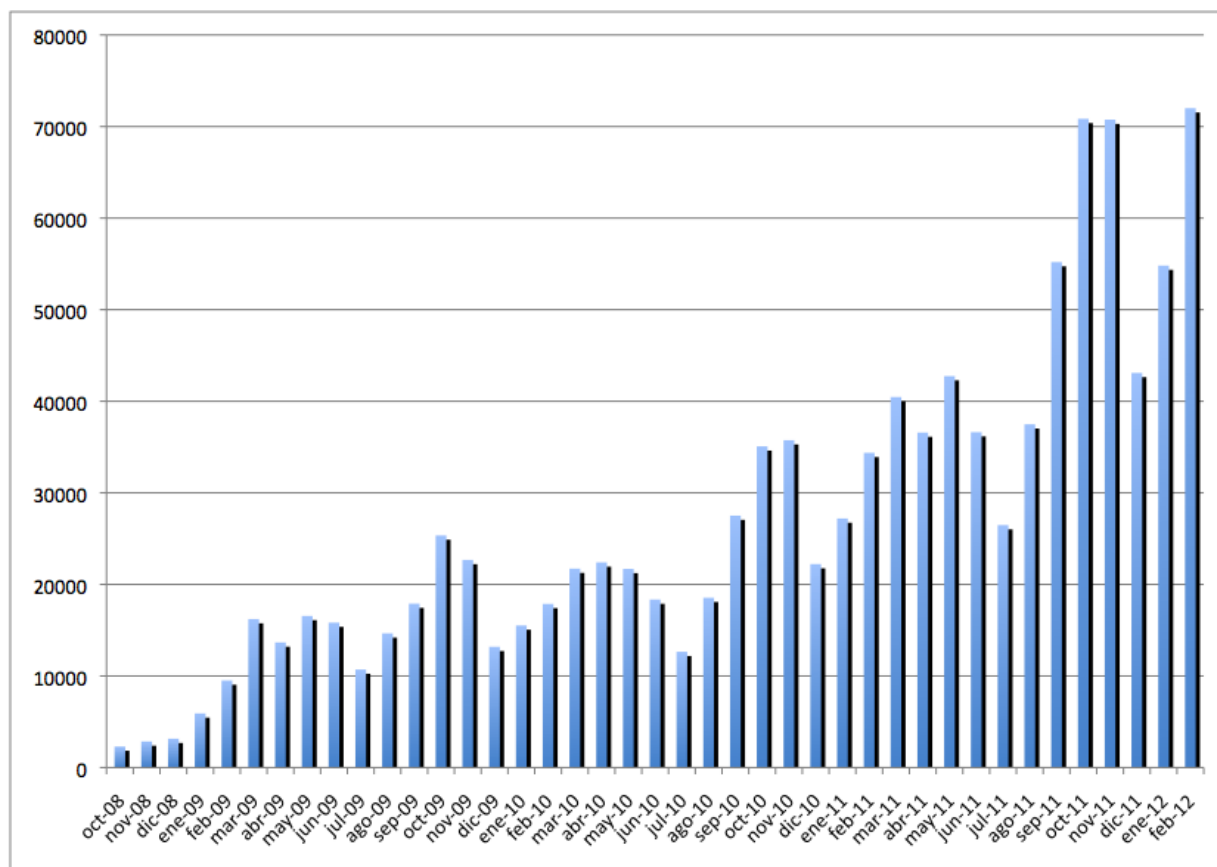


Image 2: Visits to OCW-University of Cantabria (2008-2012). Nielsen

Which are the reasons?

1. *Quality*. From the very beginning our university knew that if we wanted to show open courses we had to do it well. OCW is not only a way to spread knowledge, but also a way to show how we do it. Now we have better courses, and professors with better knowledge of the possibilities of e-learning. All the materials that we upload to EduCommons have to pass a quality control. First, we talk with the professors to know what they expect about their courses, and we explain to them the characteristics of OCW, answering all the questions. Once we have taken a decision about the most suitable way to upload the course (pdf format, HTML format, flash animations, interactive questions) we begin to work with the educational materials, giving to them homogeneity and improving them as much as possible. At the same time, we remove texts and photos that could have problems with the intellectual property. It is a hard work, but we normally find alternative resources with copyleft, often better than the originals. If we don't find alternative resources, we make them in the OCW department. At the beginning it was really difficult, but now it is possible because we have a complete OCW department.

2. *Metadata.* Every file we upload to our website has metadata about: file name, author, date, keywords, license and link to the license. We believe that this is one of the reasons of our success.
3. *Promotion of OCW in mass-media.* During the last years we have done a big effort of promotion of OCW between professors, students and local and national media. And it is very important to do it, because OCW is an unknown tool for many people.
4. *Easy and accessible website.* In our website all the materials are easy to find: you can search by category, Degree, year of publication, RSS, most visited courses, highlighted course, etc.

The screenshot shows a metadata form for a PDF file titled "3, regiones frias.pdf". On the left is a sidebar with a menu containing: Descripción (highlighted), Illustrator, Adobe Stock Photos, Contacto de IPTC, Imagen de IPTC, Contenido de IPTC, Estado de IPTC, Datos de cámara 1, Datos de cámara 2, Categorías, Historia, DICOM, and Avanzado. The main form area has the following fields:

- Título del documento:** 3. las regiones frias
- Autor:** Juan Carlos García Codron
- Cargo del autor:** (empty)
- Descripción:** Descripción de las regiones frías del planeta, con especial referencia a las actividades humanas y su repercusión en las mismas. (This field is highlighted with a blue border)
- Autor de la descripción:** (empty)
- Palabras clave:** paisajes naturales; conservación; Biogeografía; transformación del medio; Geografía Física; bosques; Medio ambiente
- Estado de copyright:** Con copyright (selected from a dropdown)
- Aviso de copyright:** Copyright 2011, por el autor del curso. Esta obra se publica bajo una licencia Creative Commons License.
- URL de información sobre copyright:** <http://creativecommons.org/licenses/by-nc-sa/3.0/es/>

At the bottom right is a button labeled "Ir a URL...". A note below the keywords field states: "Se pueden utilizar comas para separar palabras clave."

Image 3: Metadata in a pdf file.

In addition, we send to every professor the results of their courses, with full information about the web visits, and a certificate of learning innovation.

#### 4. Professors' opinion

I have been talking about our vision of OCW. But, what is the professors' opinion? What do they need? What do they expect about OCW? How can we improve?

In the current year we have made a survey to the professors with seventeen questions about their experience with OCW.

In the first part, we asked about the general knowledge of OCW:

Most of the professors knew OCW through the Area of Quality and Education Innovation, but there are some of them that knew OCW through other colleagues. Most of them participated voluntarily, but those who participated in a full degree, declared that their participation was satisfactory.

In the second part, we asked about the OCW Department. 81% of the professors declared that they had got advice and help through the OCW Department. All of them considered positively that help, and more than 60% considered that their materials were improved by our

Department. It is important to say that in a lot of occasions we didn't have to work with the materials because of their original quality.

Asking about administration procedures (Contract, certificates, ISBN, communication with the OCW Department) more than 80% considered positive or very positive the relation with the OCW Department.

In addition, more than 70% considered positive or very positive the remuneration linked with OCW publication. Only 13% considered it useless.

In the third part, we asked about our OCW website. More than 80% considered it good or very good, and only 4% considered it bad or very bad. An 80% considered that it was easy to find the OCW website through the home page of our university.

There is another subject that is very important for us: the use of OCW materials in the classroom, and for e-learning. More than 70% said that they use OCW in that way, at least in some occasions. A 12% use it always. That's one of the most interesting results of OCW, because we never thought OCW could be used in that way. So, today a lot of professors have got an extra use to this tool. Moreover, more than 50% say that they would use OCW for e-learning, if it was able to add evaluations, chats or tutorships.

In the last part of the survey (global evaluation) more than 85% consider their participation positive or very positive, and only 1% considers it negative. Otherwise, almost 90% consider positive or very positive the publication of Open Educational Resources by the universities. And more than 85% declared that they will publish in OCW again if they had the opportunity.

All of these answers are very interesting, but we find especially rich the written opinions of the professors about OCW. We asked about two questions:

*How can we improve our OCWsite?*

- More interactive resources and more videos.
- A direct link to OCWsite from the homepage of our University.
- Links to other similar courses in other universities.
- Homogeneity between courses.
- Compatibility between Moodle and EduCommons.
- More resources in English to show University of Cantabria as an open and international university.
- Translation in English of: title, description, syllabus, keywords...
- Show statistics of every course.

*Which is your general opinion about OCW?*

Very interesting tool for students and professors.

OCW may not be used as a e-learning platform, only as a way to publish courses.

It's necessary to demand a minimum level of quality in the resources.

It's necessary to upload all the resources of the course, not only a few.

More recognition for the participation en OCW.

More capacity to upload new resources if it is necessary.

More tools to add to OCW (specially for sciences).

More promotion in media.

## **5. Conclusion**

After these five years, we believe that OCW has been a great tool to improve our educational resources and to show our best materials all over the world. Our university doesn't see the OCW project as a burden, or an obligation, but as an opportunity to grow and to improve.

## **License and Citation**

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# **Linked OpenCourseWare Data: a demonstration of the potential use of OCW**

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Paper not submitted.

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# **Localization of Open Educational Resources (OER) in Nepal: Strategies of Himalayan Knowledge-Workers**

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## **Abstract**

This paper examines localization of Open Educational Resources (OER) in Himalayan community technology centers of Nepal. Specifically, I examine strategies and practices that local knowledge-workers utilize in order to localize educational content for the disparate needs, interests, and ability-levels of learners in rural villages. This study draws on insights from non-formal education (NFE) stakeholders in Nepal, including government, UN, international and national NGOs, local knowledge-workers, and learners from different villages. I specifically focus on a sample of seven technology centers to better understand how localization is defined, designed, and executed at a ground level. I illuminate obstacles knowledge-workers face while localizing content and strategies to overcome such barriers. I conclude by offering key principles to support theory development related to OER localization. This study is anchored in hermeneutic inquiry and is augmented by interpretive phenomenological analysis and quasi-ethnographic research methods. This qualitative study employed interviews, focus group discussions, observations, and artifact reviews to identify patterns of localization practices and themes related to localization of critical content in Himalayan community technology centers of Nepal. This paper provides valuable evidence not only *why* localization matters (a statement that has been hypothesized for the past decade); but also provides proof of *how* localization is executed and concrete ways that localization *could* be improved in order for OER to reap learning gains for more rural people in developing countries and in other rural communities across the globe. The full text of this paper may be downloaded for free from <http://etd.byu.edu/>

## **Keywords**

open content, OER, ICT, Nepal, nonformal education, NFE, rural development, OpenCourseWare, developing countries, Tiffany Zenith Ivins, David Wiley

## **Purpose of Study**

The purpose of this study is to better understand localization strategies used by Himalayan knowledge-workers in order to make content relevant to those they teach. The overarching academic theory that I explore is "localization unlocks the power of OER." Although this concept has been stressed at conferences and symposia regarding the growing OER movement in developing countries (Wiley, 2007; Mackintosh, 2010; OERF, 2011), concrete evidence to these numerous claims is still lacking. There are very few studies that explore the practical involvement of knowledge-workers and everyday activities related to OER localization. My intent is to build an evidentiary basis for these numerous claims by providing case studies, best practices, and strategies of localization in an effort for practitioners to improve the utility of OER in developing country settings, particularly in Nepal.

This study also seeks to lay the groundwork of a nascent body of knowledge regarding the general localization of OER in the field of non-formal education (NFE), since much of the existing corpus of OER literature relates to use in formal education settings, particularly in the higher education arena. This study is useful and relevant for understanding OER utility in developing countries, particularly in Himalayan community centers of Nepal, since existing literature is dominated by a focus on OER use in higher-income developed country settings. Finally, this paper aims to identify core principles related to teaching and learning with OER

which may undergird theory development regarding everyday use of localized OER by practitioners in rural educational development settings.

### **Overview of Study**

This research focused on three main areas of investigation: the current strategies used by knowledge-workers to localize content, the extent that they feel they localize content, and the obstacles they face doing such activities. The specific research questions for this study are given below. Findings of this study are presented in detail in the full paper in three main categories: (1) knowledge-workers' lived experiences and practices for localizing content; (2) the extent to which knowledge-workers feel that they are localizing content (based on their own definitions of localization); and, (2) strategies to overcome obstacles in the way of content localization.

It is important to also note that during the course of this research study the term *content* referred to many types of information, including (but not limited to): local issues, global issues, questions, answers, local notices, market prices, complaints, events, for sale/trade, government announcements, international news, jobs, knowledge, market prices, messages, health practices, agricultural practices, suggestions, wanted items, and weather.

### **Findings**

In summary, I have found four overriding principles that have consistently emerged with regard to knowledge-workers' lived experiences improving and expanding the localization of content for Himalayan villagers in Nepal. For a more detailed description of the 12 meta-themes in this study, refer to the link in the abstract for the complete dissertation review (Ivins, 2011).

This section will explore those key principles, provide a summary of the paper, and connect these findings back to the scholarly literature in this field. It will then explain the implications and relevance of these findings to development of a theory regarding teaching and learning using OER. Finally, the chapter concludes by looking to the future of OER localization in Nepal.

#### ***Principle 1: Localization must involve locals.***

One of salient points expressed by all stakeholders is the importance of local involvement in the customization of content for local needs. Put simply, “only a local can localize” (OpenContent, 2011). This paper provides concrete evidence of the importance of local participation in localization processes. Many respondents cited positive examples of when content worked well because of local participation in creating and/or adapting it. Several stakeholders also cited negative examples of when content did not work because it was adapted without participatory processes for including local input. Some of these key points are summarized below.

From a federal government standpoint, Manohar shared his insights:

MANOHAR: As a federal government, we face several questions related to localization: “At what level should localization take place?” “Whose responsibility is localization? What we have learned through our experience thus far is this: Local people are best suited to localize. They are the people who know what the resources and needs are. Local people will also have buy-in if they are the means whereby localization takes place. Localization means involving locals.

As employees of the Open Technologies Resource Center (OTRC), both Krishna and Jitendra shared their experiences working with local communities for content localization:

KRISHNA: I have learned that localization is only effective when done with involvement of people in the society where the content or software is to be deployed. Moreover, I feel that things like localization must not be done by one or two persons, but must involve a larger mass probably in form of a camp of 15-20 people. This way, you have several people who can experience the ownership (the content credit must ensure that the people involved in localization get their due credit) and care for its survival. This will probably ensure the most important aspect a donor/implementer cares about: sustainability.

JITENDRA: I have been working on localization of 'Ubuntu' Linux distro in the Nepali language at OTRC. The little experience that I have makes me believe that: localizations are most (in most cases 'only') effective when they are done with involvement of people in the society where the software/content is to be deployed. Localization done with involvement of people in sites far from deployment site might not be very effective as the dialect varies widely in Nepal. It seems this would be a similar [issue] in other countries as well? There are enough papers available to suggest the correlation between geographical proximity and content/software acceptability. This is my experience.

As a practitioner of nonformal education with over 20 years of experience in the field of literacy programming, Tuladhar comments on content localization in his community center:

TULADHAR: What makes [our] literacy programs different in Ward 18 [of Kathmandu] is that we utilize local materials, local wisdom, local experts, and local museums. We focus on using what the locals know and what is familiar to them. A key ingredient of localization is to specify the needs of groups. Another aspect why localization should be done in the community is because you need a relationship of trust. In the village setting, all of the community members know each other. Our facilitators engage as if they are family members. They build a relationship of trust with the students. This leads to a better ability of facilitators to tailor content for the needs of learners. Localization really is the key to retention and comprehension in literacy classes.

Indeed, quality content customization is hinged upon a participatory approach that involves locals in the process of choosing content topics, providing input regarding materials and formats, and tailoring the mechanisms for continuous bottom-up feedback.

***Principle 2: Localization is bolstered by a community of practice.***

Another principle of localizing content is tied to strengthening the network of stakeholders who are committed to getting quality content into the hands of villagers. Respondents in this study repeatedly emphasized the importance of a team effort to access, customize, and disseminate content. Lave & Wenger (1991) identify a community of practice (CoP) as a group of people united by a shared interest, craft, or profession. The group can evolve naturally because of the groups' mutual interest in a particular area, or it can be created specifically with the goal of gaining knowledge related to their field. Members learn from each other by sharing information and experiences and by developing themselves personally and professionally through group conversations either online or offline (Lave & Wenger, 1991).

During the course of this study, most respondents expressed an interest to remain connected to or become connected with other stakeholders involved in the similar kinds of activities related to content localization in which each person is involved. These CoPs are strategic to sustain momentum in the practice of localizing OER as well as offering insights on how to localize better. These CoPs exist online through discussion boards, wikis, blogs, newsgroups and other social media. They also exist in real life through small-group conversations at a learning lab or at a conference, in a field setting, through a network fostered by an NGO, or through a Youth Summit. During the course of this study, many respondents spoke about the



importance of CoPs because they provide the opportunity whereby practitioners deliberately gather to share ideas, best practices and strategies with one another.

Sunila, a youth leader and trainer from Sankhu's Youth-Managed Resource Center explains the importance of a community of practice in her life:

SUNILA: I would never have been part of this movement if it weren't for Ramita and the other youth managers in our group. We are all committed to service and so eager to help others. But, I am strong because of the support of those around me. Ramita helped me to see how computers could be useful for my life. Before I came to this center, I had no knowledge of how to use computers. My family did not see a need for me to come here. But, now I am the one helping other youths. Even though I am now married, I continue to come [to the center]. I hope I can provide help to other youths and keep this motivation [for learning and knowledge] strong.

Indeed, new CoPs are emerging in the wake of new educational and technological revolutions in Nepal and are an important component of sustaining the perpetuation of localized open content. The Youth Summit, a weekend event held for 30 knowledge-workers across Nepal, was focused on sharing best practices and challenges regarding content creation and dissemination.

This Youth Summit has led to these youth and those around them to engage in creating their own websites, showcasing their programming, blogging about their purpose and passions, swapping content via email, and building wikis with images, text, and audio files that are all used in various community centers to amplify learning for rural villagers. In both deliberate and non-deliberate ways, these youth have created a community of practice (CoP) that is simultaneously global, digital, local and tangible (Lee, 2009).

As new and old CoPs evolve, shared ideals become the backbone for social betterment activities. This appears to be one of the most far-reaching and cost-effective ways to share local content across the nation of Nepal. Nepali youth involved in YMRCs coordinate between their local communities and interested outside individuals—anyone from international donors to government officials running social programs to the random Internet clicker (as evidenced by several international students who have become interns with rural community centers) (Lynk, 2009).

As the diversity and number of players of a CoP increases, local leaders are bolstered with strategies to respond to local needs while also building inter-community, national and global connections (Lambson, 2009). Through these connections, social capital for knowledge-workers increases, and through local outreach, each Nepali village with a micro-learning center is able to connect more easily to resources that expand knowledge and to engage in localization activities that allow these tools to be used more effectively.

***Principle 3. Localization must be done in appropriate formats.***

While there has been great effort and focus on deploying educational hardware in the developing world, much less hype and attention has focused on the content students will use once these systems are within the reach of hungry minds. Communities are not only facing questions regarding content localization; they are also pushed to consider the best and most appropriate formats for sharing content with villagers who have varied ability levels and live in different villages laden with unique combinations of obstacles for accessing that content. Indeed, many of the questions regarding content localization are hinged on the decisions regarding what formats the content may be shared to best accommodate learner's ability levels (e.g., audio file, text file, video file, wall newspaper, print-out, group discussion).

Some of these other questions that are currently considered with regard to selecting formats for localized content include: How can educational systems, and the stakeholders that support them, adapt existing and new content onto new mobile devices? Will this adaptation be able to challenge the existing income streams and vested interests of current content production and dissemination models? Should this content focus on ebooks and other electronic media that replicates existing content, or does this provide an opportunity to change the ways in which content is created, teachers educate, and students learn? (Rowe, 2009)

Some additional insights from respondents regarding appropriate formats for disseminating content are given below.

SANJANA: What we learned through OKN is that it's important to document indigenous knowledge through audio files, digital photos, and stories. Many times, the best way to share local content is through discussion, mass meetings, word-of-mouth, and by posting on a wall-newspaper by creating content in understandable formats (can be audio, visual or illustrative print) at the various access points. Content that is pushed to the central hub (housed in Kathmandu) got shared to other areas with similar concerns. Usually the original format of the content is what worked in the other communities as well.

Jitendra and Krishna agreed with Sanjana that it is important to respect the ability levels of learners and not expect that literacy levels will be very high in remote places. For this reason, content should be made available in non-text formats.

JITENDRA: I remember when we first started working with an NGO doing video tutorials with content about fish farming in villages of far western Nepal (near the China border). It was essential in this case that content delivery should not be in text, but instead in video and audio files for lower-literate groups. This was done in these communities using solar power and an LCD projector and white wall.

KRISHNA: I have been working with remote villages in far eastern and far western Nepal. As per the conversation with villagers out in those areas, I have learned that they love to learn from video tutorials rather than text-based materials. That is the best format for sharing content to them since many of them have not yet had a chance to join the literacy program yet. But, this kind of content motivates them for more learning because they see the value of knowledge.

Besides identifying new and appropriate formats for disseminating content, several respondents indicated a need for changing the existing kinds of formats used for creating content. Subir, from Open Learning Exchange (OLE) Nepal explained:

SUBIR: Many more knowledge-workers would be able to modify and share content if the software was geared to their levels. This means that the formats must be more simple than they are right now. If we expect facilitators and tele-center staff to engage in content sharing activities and content editing, then we should involve them in training about software. Also, the wiki must ensure WYSIWYG editor at the minimum. Any further simplification would be more appreciated, I am sure.

Because software continually evolves, it is essential to also continually seek to identify the most appropriate formats that can and should be utilized for disseminating content in rural villages. This means that low-tech and context-rich formats should be identified and/or developed and shared between communities according to their capacity levels. These continually evolving tools will become the platform for continually evolving content to be localized and delivered in formats that are congruent with the needs of local users.

***Principle 4. Effective localization is proportional to understanding local contexts.***

A theme that continued to emerge through the course of interviews and focus group discussions was this: the more a knowledge-worker understands a learner's context, the better that content can be localized to the learner's needs. That said, various respondents attached different weight to specific indicators related to context. Some of these differences are referenced in the definition of localization in the first part of Chapter 4 (e.g., culture, religion, geography, gender, profession etc.) Some of the salient responses that evidence this theme are given below:

TULADHAR: We need to connect literacy to content that is related to real life situations like business and health. People need advanced classes. In Kathmandu, people prefer both English and Nepali classes. Without a mechanism for financial support, literacy classes cannot be sustained. We have explored beauty parlor training, a sewing center, also training in local music (like pipe and drum) for 9 months. Income generation is the first motivating factor for literacy. We need more materials on this topic and in the formats that allow neo-literates to engage.

KRISHNA: Again by the definition of 'content,' we just can't be limited to computer training content, or any ICT-based content. If we are really doing this work for [the local people], then we need to address the various areas of their interests. And especially their necessities of daily life, like: agriculture, health, irrigation, microenterprise and other content related to their areas.

A major component of contextualizing content is fostering an understanding of rural realities. One respondent, Tara, is from the rural village of Pelakot. After traveling and studying overseas for four years, he helped initialize an educational initiative in a community center of his home community. He had laid out a plan with other Nepalese students who lived abroad and spoke about the disconnect of their plans designed in the USA with the rural realities of his home village once he arrived after a four year gap.

TARA: We spent all these hours and hours of meetings among Nepalese students to figure out the best words, the best approaches to address the Nepalese communities. But local dynamics were much different than what we assumed while planning in the USA. Later, we were so involved with determining the culture in that area [where we had planned to do training], the language variation between people in Kathmandu compared to Pelakot Galyang, and the differences in the kinds of incentives for people in different villages and everything, we felt very overwhelmed with all aspects of understanding rural realities. But, even though this was time-consuming, we realized it was worth it if we would be able to customize the project according to the local needs and context.

SANJEET: We held tons of conversations with different people, trying to determine the best possible way to understand their problems, developing the questionnaires to help us understand their interests, and determining various groups and parties that can help us with the solutions in this [rural] community. This was very challenging, but it was the best learning opportunity. As three different team members, we had three opinions, three approaches, and three solutions for addressing the different conflicts and challenging situations of working on an educational project with the leaders of the rural community center. And, during all the confusion of trying to reach one common solution, we learned that community development is difficult because it doesn't have one fixed solution as in maths. That day we realized how important it is to invest a lot of time researching things on the ground before coming up with the decision.

Even practitioners and stakeholders who have been working in the field of development for years acknowledged that they are often surprised by the way projects will *succeed* or *fail* in rural communities. What works well in one village may not work at all in another village.

Because of this, scalability of micro-learning projects in developing countries is an oft-debated subject. At the core of successful replication of development models is identifying integral ingredients that can remain consistent while allowing flexible scaffolding that can be modified to the local environments where these projects are implemented (Christensen, Lehr, & Fairbourne, 2010). The problem is, most programs do not build in that flexible scaffolding; rather, a standardized (e.g., regional or national) approach is often used instead.

Shrutee, a Nepalese member of the research team, summarized FGD I (Appendix D) this way:

SHRUTEE: Today we held a focus group discussion in Kathmandu at the NGO office of Tulasi Meher UNESCO Club. There were politicians, IT professionals, social workers, volunteers and academicians. Together, they were talking about the former projects that have worked and some new projects that organizations were thinking of launching. Then, the conversation turned to the concept of starting an open content portal for sharing educational resources among Nepalese people. They agreed upon the fact that Nepal is way too diverse and it could not be predicted at a central level what was needed in a village level. For example, there are software engineers who can develop software for the whole country and yet there are villages where people still do not know the existence of another village, so how could they know that this software even exists? No matter what all the people talked about in all the meetings that we conducted, the concept of launching an open content portal was always supported as a worthwhile project because someday the need for educational materials is so great in rural communities. The only thing is finding a way that ground-level people can gain the skills to access and localize those educational materials. Also, everyone agrees that the computer is going to be a basic need for people rather than just a machine. So, if everyone is going to use ICTs, then they have every right to know where to get good content using ICT tools.

Few themes emerged as often as that regarding the importance of context to localization. Indeed, the evidence reveals that the relevance of content to local needs is directly proportional to the degree of understanding the knowledge-worker has of the local community.

## Conclusion

The present OER literature and the results of this study both concur with the imperative that the *open* in OER must be perceived not merely from a technological perspective but also from a governance standpoint. This paper provides valuable evidence about *why* localization matters (a statement that has been hypothesized for the past decade). This paper is unique in that it also provides evidence of *how* localization can and should be executed in order for OER to reap efficacious learning gains for rural people. The *open* should also reflect the institutionalization processes that facilitate *all* types of stakeholders to participate on equal terms.

Besides the changes indicated as necessary from a governance and institutional standpoint, the literature from the field of instructional design reveals that there is still a gap in the mentalities and mechanisms needed for widespread local participation in the localization processes which make education meaningful. Parallel to the overarching gap in decentralized educational policy and educational practice, the OER field has yet to achieve decentralized localization of content. In order for more stakeholders to reap the benefits of OER in rural educational development settings, OER proponents contend that the old phrase “content is king” will be replaced with the slogan “community is king” (Degeyter, 2007). These arguments infer that localization of OER are tied to social movements that will result in institutional change of how curricula are created and how educational programming is executed. Kanwar, Kodhandaraman, & Umar (2010, p.1) argue that:

The present debates in OER are too focused on technology... and there is rarely any discussion on issues such as stakeholder engagement and the politics of power. OER require a process-oriented approach in which stakeholders and citizens come together and articulate their views and influence institutional change.

As decentralized localization practices increasingly challenge the norms of centralized control, community and government roles are being redefined. These are not the only institutions impacted by OER and ICT; these technologies are also redefining family roles and individual identities. Lie and Sorensen (1996) emphasize the sentiment that technology impacts the definition of one's identity and alters one's sense of community. As OER are increasingly localized to specific abilities and interests of learners through mobile telephony and low-tech ICT, technology is increasingly incorporated into the domestic sphere. This phenomenon is laden with nuances of impact that at once seen and unseen; the "social and technical are enmeshed in our own and collective domestications" (Lie & Sorensen, 1996, p. 223).

Thus, highly localized OER not only open up educational opportunities; they open up experiences, options and choices of what we can do in every sphere of life. They also create new options of what we *think* we can do, and therefore, our perception of the world and our own role in it. Hence, one slogan of the open educational movement: "Learning is expanding" (Wiley, 2006). Multiple meanings emerge regarding OER in rural communities: opportunities for accessing knowledge are *expanding*; learning is *expanding* opportunities for people to do more things; and new educational opportunities are *expanding* one's reach in and across the world.

As OER are integrated into family life in Nepalese villages, the devices and the knowledge accessible through them also substantively impact social relationships. "One ... is left to local stratagems to negotiate powers and abilities" (Hirsch & Silverstone, 1992, p. 2). Nepalese villages, like other communities across the world, seem conflicted with regard to their yearning for more information and their simultaneous disdain of foreign technologies that pose a threat to their traditional ways of life. On this stage of open learning and increased access to information, if content does not also include localization that is achieved through participatory and constructivist processes, then "the freedoms [of expanded access to content] may feel new, but the tyrannies are as likely to be too familiar" (Hirsch & Silverstone, 1992, p. 34).

There are very few existing studies that have explored the practical involvement of knowledge-workers and their everyday activities related to OER localization. However, this full-length study provides an evidentiary basis for numerous claims by providing rich narratives related to knowledge-workers' best practices, challenges, and strategies of OER localization in order to improve the utility of OER in Nepal. This study also contributes to the groundwork of a nascent body of knowledge regarding localization of OER in the field of *non-formal education* (NFE) generally, since much of the existing corpus of OER literature relates to use in formal education settings, particularly in the higher education arena. This study is also useful and relevant for understanding OER utility in *developing* countries since existing literature is dominated by a focus on OER use in developed country settings.

As micro-learning centers in Nepal increasingly incorporate digital content and distribution mechanisms, the social role of communities and educational institutions is being redefined. The use of digital audio and visual content blurs the divide between those who are literate and non-literate. The use of new technologies presents a duality whereby rural villagers both resist and yearn to embrace these resources. In some cases, local people in the community mistrust technology as something threatening to ancient social structures and traditional social

norms. In other cases, local people view it as a means to access critical health information, improve knowledge of agricultural best practices, and to open entrance to new markets to sell their crops sans middlemen.

Although Nepali formats for content collection, editing and distribution slowly proliferate; English is still the dominant language of OER resources. Most local people do not read English and have difficulty relating to the Internet content as a result. But, in some cases, interest in knowledge external to their village becomes increasingly attractive and villagers' perceptions of opportunity through technology may sometimes be reinforced. While some believe that access to knowledge in rural villages will draw people away from their villages into more urban centers (a.k.a. brain-drain), other people believe that increased access in rural areas will allow young people to stay, advance in learning and expand online social networks while remaining home to care for their family farms (Martin, et al., 2007; James, 2004).

Until local people are more comfortable with ICT and perceive it as relevant to their immediate lives, the local experts will continue to be called on to validate and support customization of content designed for local people's needs. This may be the best way to bridge the past way of doing things with the new opportunities presented by 21<sup>st</sup> century tools. Respected elders and local ways of knowing become the intermediaries between the content available through new technologies and the ancient customs of villagers in rural Himalayan villages.

In conclusion, this study provides concrete evidence regarding the practical activities that knowledge-workers engage in to create localized OER for rural communities in Nepal. Salient principles that emerge from the unique data generated by this research lay the foundation for the theory that "localization unlocks the power of OER." The following core principles emerged during this study regarding content localization in Nepal: localization must involve locals; a community of practice bolsters localization; localization must be done in appropriate formats; and effective localization is directly proportional to understanding local contexts.

While these principles might seem simplistic, until now they have not been supported by current data regarding OER in non-formal education settings of Himalayan community centers. These principles are integral to theory development related the fields of OER and ICT in educational development settings of other rural communities across the globe. The findings of this study are rich with implications of innovation and transition in rural epistemologies, pedagogies, and ontologies during the 21<sup>st</sup> century. Indeed, this paper reveals that Nepal stands on the brink of an educational and sociological sea change.

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# Matching OER Ideals and Practices in India: A Survey

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## Abstract

Open Educational Resource (OER) is a nascent phenomenon in India enabled by the growth of ICTs and Open Source technologies. It is interesting to note that OER practice has preceded theoretical formulations in India. Over the last decade, several meaningful initiatives have utilised ICT to augment the quality of education. These initiatives, which we now label as OERs, span across different levels of education (primary, secondary, tertiary) and different types of providers (government/public, private). They include:

1. Consortium for Educational Communication (CEC) ([www.cec-lor.edu.in](http://www.cec-lor.edu.in)), produces TV programmes on syllabus based topics, which are archived in a learning object repository.
2. National Council for Educational Research and Training (NCERT), uploads its textbooks online for free access by teachers and learners through its website – [www.ncert.nic.in/textbooks](http://www.ncert.nic.in/textbooks).
3. NSDL – the National Science Digital Library, an initiative of the Council for Scientific and Industrial Research (CSIR) and provides supplementary curriculum based content for free access.
4. Ekalavya is an open educational initiative by the Indian Institute of Technology, Bombay for content development in Indian languages. It includes OSCAR (Open Source Educational Resources Animation Repository) which provides web based interactive animations as teaching resources.
5. E-Gyankosh ([www.egyankosh.ac.in](http://www.egyankosh.ac.in)) is an initiative of IGNOU (Indira Gandhi National Open University) which provides access to over 30,000 modules of courseware in the self instructional format and 1600 videos.
6. The National Programme on Technology Enhanced Learning (NPTEL), a joint effort of the Indian Institutes of Technology and Indian Institute of Science, provides digitised and web based lectures on engineering courses to faculty and students in private engineering colleges.
7. The Virtual Academy for the Semi-Arid Tropics (VASAT) provides non-formal “natural resource literacy” to rural communities using simple technology tools.
8. Indira Gandhi National Open University's (IGNOU) FlexiLearn expands the scope of Open and Distance Learning by providing “free learning resources integrated with a LMS” to enhance personal learning free of cost.
9. The National Mission on Education through ICTs (NME-ICT), and its web portal – Sakshat – that provides one stop access to e-content, e-journals and e-books.

This study seeks to map the innovation in terms of technology and pedagogy and impact of some of the initiatives listed above. In doing so, the study will delineate the parameters that will define the growth trajectory of OERs in India. For instance, these initiatives cannot be evaluated for the presence of the Four Rs that inform the OER concept but can be usefully defined by the potential *extent of reach and extant of use*.

## Keywords

OER ideals, OER practice, OER in India, ICT and OER

## Introduction

Indian educational scenario is a study of contrasts. On the one hand, there are higher education institutions offering world class education. On the other, there are rural schools which do not have adequate infrastructure and human resources. According to a recent World Bank report, India has one of the largest educational systems in the world with over 10 million students but only one in ten students have access to higher education. (World Bank Report on “Education in India”) The stupendous growth of ICTs and Open Source technologies attempt to bridge the gap between the haves and havenots in terms of access to education. Government policies increasingly focus on the need to collaborate in creating and sharing resources. This situation has led to initiatives which have harnessed the power of ICTs to disseminate good quality resources and best teaching and learning practices across the country. These initiatives can be effectively labelled as Open Educational Resources (OERs). However, on a close scrutiny, these resources cannot always be categorised under the Four Rs of Reuse, Revise, Remix and Redistribute – the defining frames of OERs. (*OER Handbook*, 2008, p.8) This study will examine the existing initiatives through the OER framework and propose parameters that can be used to assess the OER trajectory in India.

## Impetus for OERs in India

Recently, the University Grants Commission (UGC), the apex body for Indian Higher Education, has provided the following fact file. There are 44 Central Universities, 285 State Universities, 130 Deemed Universities, 107 Private Universities, 6014 Aided Colleges and 374 Autonomous Colleges in India (Source: [www.ugc.ac.in](http://www.ugc.ac.in) ). However, this large number is not adequate to cater to the growing demand of the sizeable population of Indian youth. “India would have to nearly quadruple existing college seats and more than quadruple the number of professors to achieve the 20 percent GER by 2014.” (Dukkipati, 2010, p.2) Technology offers an effective solution for the spread of education across a vast geographical area and its reach to large segments of the population. Decreasing costs of hardware, increasing prominence of open source technologies and stable connectivity have also added potential to the power of ICTs.

Hand in hand with the technological advances, government policies have emphasised the need to create good quality teaching – learning resources. The *India Vision 2020* document emphasises the need for India to become “a superpower in knowledge” by nurturing knowledge based resources such as technology, organisation, information, education and skill. These resources increase when shared and are easily portable. (Gupta, 2002, pp. 24-26). The definition of knowledge based resources is interesting in that it foregrounds the OER concept in terms of sharing and portability. Echoing the idea, the XI Five Year Plan document outlines collaboration and connectivity through the launch of a National Education Mission through ICT “which will provide Broadband connectivity to all the institutions of higher learning and make available high quality e -Content for dissemination through the connectivity to be provided under this Mission.” (“Harnessing Growth”, 2008) Thus, rapid advances of ICTs and the long felt need to expand the reach of higher education have paved the way for several meaningful ICT enabled initiatives, which can be considered precursors of OERs in India.

The table given below provides a bird's eye view of some the ICT enabled initiatives. Although they are aimed at different levels of education (primary, secondary and tertiary), they share certain characteristics:

- They are conceived and promoted by national institutions
- There is government support in terms of policy matters and funding
- They extend the existing knowledge base and domain expertise
- They use a heterogeneous mix of media – print, audio, video and web
- Curriculum planning and/or adoption is a major thrust area in these initiatives. In other words, they operate with tangible and viable expectations of output

- While all of them propose open access, not every initiative uses the Creative Commons license

S. No	Name of the Initiative	Intended Educational Level	Type of Initiative	Type of Resource created
1	Consortium for Educational Communication (CEC)	Higher Education	Television Programmes	Curriculum based resources archived in learning object repository
2	E-Gyankosh of Indira Gandhi National Open University (IGNOU)	Higher Education	Online Courseware & videos	Self Instructional Material
3	FlexiLearn of IGNOU	Higher Education	Digitised Courseware with Open Access	Lifelong learning with or without certification
4	National Programme on Technology Enhanced Learning (NPTEL)	Higher Education	Video and Web based lectures	Broad based curriculum oriented resources
5	Virtual Academy of Semi Arid Tropics (VASAT) of ICRISAT	Non – formal education	Learning Objects in an open source repository	Need based information for the agricultural sector
6	Open Source Educational Resources Animation Repository (OSCAR)	Multiple levels	Teaching resources	Web-based animations
7	eKalavya	Multiple levels	Open Educational E-resources	Content in Indian Languages
8	National Science Digital Library (NSDL)	Secondary & Tertiary Education	E-Resources	Curriculum based content
9	National Council for Educational Research and Training (NCERT)	Primary & Secondary Education	E - Resources	Online Text Books
10	National Mission on Education through ICTs (NME-ICT)	Multiple levels	E-Content, E-Journal and E-books	Web Portal

### Mapping Innovation and Impact

As the bird's eye view reveals, each of these initiatives have clear cut projections regarding the type of initiative, intended level of usage and nature of resource to be created. This synchronisation allows a neat balancing of technologies and pedagogies in all these initiatives. For the very same reason, they can also be examined through the OER framework. A few of these initiatives will be analysed in the following sections.

**Consortium for Educational Communication (CEC)** is an inter-university centre of the University Grants Commission (UGC) ([www.cec-lor.edu.in](http://www.cec-lor.edu.in)). It was formed in 1993 to produce TV programmes on syllabus based topics. These are archived in a learning object repository. The objectives of the initiative include

- \* Dissemination of educational programmes, through broadcast and non-broadcast modes
- \* Production of educational programmes (especially video and audio)
- \* Providing a forum for the active involvement of academic and other scholars in the creation of appropriate educational programme. (Source: [www.cec-lor.edu.in](http://www.cec-lor.edu.in))
- \*

Utilising the capability of Indian satellite links, this initiative broadcasts and telecasts its material through the Countrywide Classroom service.

Program Title	Media Centre	CD/DVD No	Subject	Sub Title	Learning Object	View Module
Paper-II, Poetry	EHYD	CEC/EHYD /E_Cont NME ICT	English Language	1. Introduction 2.The Striders 3. The Striders, Centri. 4. Reader Fish 5.	Indian Writing in English_ Modern Poetry_ A K Ramanujan	<a href="#">Click here</a>


Through a simple navigation tool and a database, these television programmes are archived as searchable learning objects. The highlight of the resource in terms of the OER framework is its collaborative model of content generation through its regional Electronic Media Research Centres located within higher education institutions. Another highlight is its adherence to a common minimum curriculum coverage across the country on any given topic/course. While the resource is accessible, there is no clear mention of copyright and license. Further, there is pooling of resources from across the country but no evidence of the four Rs.

**eGyankosh and FlexiLearn** are interrelated initiatives formulated by IGNOU. eGyankosh is a “National Digital Repository to store, index, preserve, distribute and share the digital learning resources developed by the Open and Distance Learning Institutions in the country.” ([www.egyankosh.ac.in](http://www.egyankosh.ac.in)) There are more than 30,000 items in the repository and there is a wiki for collaborative content generation. While items in the repository are copyrighted, they can be accessed free of cost, through a registration process. The highlight of the initiative is the archiving of resources to be shared nationwide. Given that this is a student support initiative in the Open and Distance Learning format, this comes close to the idea of Marc Eisenstadt's “knowledge media.”

FlexiLearn is an expansion of the potential of eGyankosh, in that entire courses are available online for students to peruse. The existing print based course materials prepared in the Self Learning Format are digitised as educational resources and integrated into a Learning Management System. While the courseware is open access, any certification requires a

student to pay and register. This provides an interesting perspective regarding the pricing on online content and an economic model for propagation of OERs.


**NPTEL** is an initiative of the seven Indian Institutes of Technology and Indian Institute of Science spearheaded by the Ministry of Human Resource Development, Government of India. The basic objective is to provide quality resources for engineering and science courses, in effect bringing the best teaching and learning practices to second tier institutions. This objective is a well perceived need, given the mushrooming of private engineering colleges across the country without proper infrastructure and qualified faculty. At the end of the first phase, there are 125 web courses and 135 video courses on core engineering disciplines.



## NATIONAL PROGRAMME ON TECHNOLOGY ENHANCED LEARNING

A JOINT VENTURE BY INDIAN INSTITUTES OF TECHNOLOGY &  
INDIAN INSTITUTE OF SCIENCE

FUNDED BY  
THE MINISTRY OF HUMAN RESOURCE DEVELOPMENT  
GOVERNMENT OF INDIA



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The main objective of NPTEL program is to enhance the quality of engineering education in the country by developing curriculum based video and web courses. This is being carried out by seven IITs and IISc Bangalore as a collaborative project. In the first phase of the project, supplementary content for 129 web courses in engineering/science and humanities have been developed. Each course contains materials that can be covered in depth in 40 or more lecture hours. In addition, 110 courses have been developed in video format, with each course comprising of approximately 40 or more one-hour lectures. In the next phase other premier institutions are also likely to participate in content creation.

**Whats New**

- 6-Apr-2009 - Video Course on [Advanced Finite Elements Analysis](#) updated.
- 31-Mar-2009 - Video Course on [Quantum Physics](#) updated - 8 lectures added.
- 20-Feb-2009 - Video Course on [Classical Physics](#) updated - 2 lectures added.
- 23-Jan-2009 - Video Course on [Physics I - Oscillations & Waves](#) added.
- [FAQ - How do Institutions access NPTEL contents?](#)
- [FAQ - How do Individuals access NPTEL contents?](#)

© Copyright | Disclaimer

Branch	Web	Video
Basic Courses (Sem I & II)	16	10
Civil Engg	25	13
Computer Science & Engg	22	17
Electrical Engg	16	20
Electronics & Communication Engg	20	19
Mechanical Engg	27	14
Ocean Engg		1
Biotechnology		2
Total	126	96

The highlight of the initiative is its accurate perception of the need for collaboration among institutions. Also, the curriculum for each course is comprehensive and designed to include variations in syllabi found across institutions. An unintended outcome of the initiative is its popularity as YouTube lectures. To a large extent, this has widened the scope of copyright and licensing issues. As an OER initiative, the NPTEL resources combine social responsibility with ideals of sharing and collaboration.

## VASAT

The Virtual Academy for the Semi-Arid Topics has a collection of learning resources on agricultural practices “to educate and support a critical mass of rural women and men spread across vast geographical areas by informing them about drought and desertification.” ([www.icrisat.org/vasat/learning\\_resources/VC/index.htm](http://www.icrisat.org/vasat/learning_resources/VC/index.htm))





As illustrated above, the VASAT repository is a product combining the local and the global through the power of technology. Demand driven and need based resources are created by national and international partners. Local partners access and adapt the content to suit the needs of the local communities. In effect, this provides capacity building in terms of identification and articulation of as well as resolution to a localised problem. A highlight of this initiative is the clear framework of collaboration among the different stakeholders. Another highlight is the simple technological tools (PPT, Flash Videos and html files) used in these resources which are less theoretical and more application oriented.




The picture given above is a screenshot of a lesson on Groundnut Varieties, which forms part of a Course on Groundnut Production Practices. This simple PowerPoint slide is self-contained and uses pictures and notations effectively. (The idea is that it is less important for rural communities to know the theory and more important to identify and locate the specific information useful to them.) Another interesting aspect of these resources is that they have been granulated into manageable chunks well within the grasp of learners in the non-formal education sector. From the OER perspective, VASAT resources come with a Creative Commons non-commercial attribution license. In effect, this enables the four Rs even though the actual practice of the same is not readily apparent.

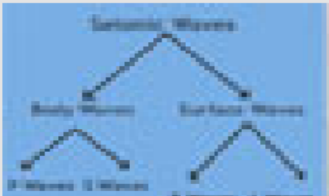
### **eKalavya & OSCAR**

These are resources which are part of the Open Educational Initiatives from the Indian Institute of Technology, Bombay. Both these resources target different levels of education. Further, they are effective as Teacher Resources. There is a Creative Commons Attribution-NonCommercial-ShareAlike 2.5 India license enabling re-use.

**OSCAR** (Open Source Courseware Animations Repository) aims to build a Learning Object repository of web-based interactive animations and simulations for teaching and learning scientific concepts. The aim is to encourage independent learning through distance education methodologies. “An auxiliary goal of Project OSCAR is to provide training opportunities to students in developing LOs, managing the back-end of the repository, and conducting educational research.” ([www.oscar.iitb.ac.in](http://www.oscar.iitb.ac.in)).



**Earth Science**  
(Note: Please click on icon to view Animation directly)



Run

**Title**  
Level  
Course:  
Summary:

**Seismic Waves**  
Under Graduate  
Geophysics  
Seismic Waves- These are energy waves caused by an impulse such as sudden breaking of rocks within the Earth or an explosion. Seismic waves are of two types: Seismic Body Waves & Seismic Surface Waves.

**Keywords**  
Language:

**Credits**  
IDD writer:  
Mentor:  
Developer:

English

Prof. Soumyajit Mukherjee  
Prof. Soumyajit Mukherjee  
Bhairavnath Lahotkar

Rate / Comment
Download IDD
Download

**eKalavya** (<http://ekalavya.it.iitb.ac.in>) also focusses on e-content generation, including educational books and audio-visuals. The highlight of the initiative is its focus on content generation in Indian languages. This is a clear marker of localisation of the OER concept. For OER to succeed in a multilingual country like India, the linguistic localisation becomes a useful incentive.

### NME-ICT – Sakshat

The National Mission on Education through ICT (NME-ICT) is the umbrella project that connects many of the initiatives discussed in this study. The mission's main objective is to build connectivity and knowledge network. A related objective is to create and standardise knowledge modules as well as create quality assurance benchmarks for the resources generated under this initiative. The public face of NME-ICT is the web portal, Sakshat ([www.sakshat.ac.in](http://www.sakshat.ac.in)). The portal is structured to mentor the interaction between the three important components of the teaching-learning process, namely the learner, the teacher and the content. That this interaction is facilitated through policy support of the Ministry of Human Resource Development is what makes the initiative sustainable.

STUDENT'S CORNER	Support self learning through virtual classes and testing services, nurture learners through guidance and counselling. Manage scholarships under the National Merit Scholarship Scheme.	TEACHER'S CORNER	Provides links to teacher's empowerment programmes, uploading project proposals for NME-ICT and announcement of class schedules.	KNOWLEDGE PLUS	Explore the world of web based knowledge resources in the form of e-books, e-journals and open educational resources.	INTERACT	Communicate and share knowledge with teacher/mentor or peer group in real time or asynchronously.
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Site is viewed 534777 times

### Conclusion

Certain convergences are readily discernible in the initiatives discussed in this study. Almost all of them have policy and monetary support from government agencies. Institutions of national importance have heeded the call for collaboration and sharing of knowledge

resources and have pro-actively engaged themselves and shared their expertise. In the process, effective quality benchmarks are continuously created. Another point of interest is that even though premier institutions, with proven expertise of the technologies, are involved in many of these initiatives, the technology component is simple. This is in keeping with the slow connectivity and low bandwidth conditions. Further, there is a neat balancing of both technologies and pedagogies to address the immediate requirement and prepare the ground for long term sustainability.

We still need to ascertain whether these resources are Open Educational Resources. To the extent that these initiatives provide educational resources through Open Access, they can be termed OERs. However, the copyright and licensing issues still remain. Not all of them have Creative Common licenses. Even where the licenses are open, there is no tangible evidence of Reuse, Remix, Revise and Redistribute. One possible explanation is that OER is a nascent phenomenon in India. Another and more important fact is that OER will probably remain **AER (Accessible Educational Resource)** for the near future. The reason is that there are policy decisions on OER in India and there are individual institutions and individuals involved in the exercise. The two groups have to work together. Also, the key to the success of OER lies in its ability to percolate through restrictive individual mindsets, institutional norms and government policies.

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- [www.sakshat.ac.in](http://www.sakshat.ac.in)
- <http://ekalavya.it.iitb.ac.in>
- [www.oscar.iitb.ac.in](http://www.oscar.iitb.ac.in)
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## **Mobile Learning with OCW – Generation of smarter learners**

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### **Abstract**

Smartphones and tablet devices, which have drastically changed the forms of communication in recent years, will surely change the forms of learning as well in the course of the near future. With this in mind, we are exploring the near-future potential of OCW in mobile learning. The key to the permeation of OCW lies in figuring as to how to set people's hearts and interests towards academic contents. Learning experiences do not only generate from topics taught in schools and universities, but also from unexpected moments of daily lives, something that you caught a glimpse by chance, and when you suddenly feel the urge of gaining knowledge in order to do something new. The mobile technology provides us with the input capability for informal learning experiences, and moreover, accumulates those inputs to clouds. Our company, Castalia, cast a spotlight on mobile technology and aim to bridge informal and formal learning experiences by providing platforms of mobile learning. On iUniv, our social learning service platform, users can share their knowledge with other learners by putting social annotations on our collection of over 70,000 OCW/OER and other lecture audio and visual materials to date. The Fusen™, our social annotation feature, has a timed comment function that holds playback time information of audio and visual contents. Whereas iUniv provides high-context learning experiences, we also offer Gooocus to provide low-context learning experiences. Gooocus, our smart Wikipedia reading application, considers the searching process a learning experience. The words searched on Gooocus, which is a Smartphone-based application available on iPhones and Androids, will be accumulated on its database and at the same time be shared through Facebook and other network services. For example, you can search the information of a specific location on Gooocus by using the GPS. We consider the searching process on Gooocus, which has a low-context nature, an informal learning experience. And we believe that the input process of word searching lead to an output process of viewing and listening to academic contents such as OCWs. Gooocus provides tools to collect new information and acquire knowledge. Our company, Castalia, is confident that the usage of OCW on our mobile learning platform will generate a whole new breed of learners.

### **Keywords**

mobile learning, informal learning, smartphones, tablet devices, new-age learners

Smartphones and tablet devices, which have drastically changed the forms of communication in recent years, will surely change the forms of learning as well as in the course of the near future. With this in mind, we are exploring the near-future potential of OCW in mobile learning.

While universities around the world have begun utilizing the OCW, only so many people have enjoyed its benefits so far. In order to generate a learning experience, we will need both good-quality learning contents and a system to inspire people's interests in academic contents. At this time, although good-quality learning contents are increasing, there is not a system to inspire people's interest in learning contents. More people aspire to learn something, but they are not sure what their target of interest is. Even those who are aware of their fields of interest do not know the way to find the contents to satisfy their curiosity. Thus we are yet to reach the stage where OCW is used widely. We believe that mobile/tablet devices and social network would play a major role in solving this issue.

Interest toward academic learning content does not only generate from topic-based learning in

school classrooms, but also from unexpected impulse to learn in daily lives, something that you caught a glimpse by chance, and when you suddenly feel the urge of gaining knowledge in order to do something new. On the other hand, low-context learning-oriented actions (such as searching on Wikipedia with your smartphone) generating from the daily desire “to find out about something” have been discarded as worthless in the context of academic learning. Mobile technology and social network sharing will give value to such daily informal learning experiences in the context of learning. The mobile technology provides us with the input capability for informal learning experiences, and moreover, accumulates those inputs to clouds. Analysis of the accumulated inputs enables the suggestion of the OCW contents that meet the learner’s interest. Social network enables the sharing of such inputs, almost on a real-time basis.

With the social and mobile learning platform presented by Castalia, informal learning experiences gain a new value that bridges the learner to academic experiences.

On iUniv, our social learning service platform, we have collected over 70,000 OCW/OER and other lecture audio and visual materials to date. Users can share their knowledge and realization with other learners by putting social annotations. The Fusen™, our social annotation feature, has a timed comment function that holds playback time information of audio and visual contents. Interactive communication with other learners by way of social annotation enables the learner to be exposed to pieces of knowledge that he/she could not have known otherwise. It also helps maintain the learner’s motivation for learning.

Whereas iUniv provides high-context learning experiences, we also offer Gocus to provide low-context learning experiences. Gocus, our smart Wikipedia reading application, considers the searching process a learning experience. The words searched on Gocus, which is a Smartphone-based application available on iPhones and Androids, will be accumulated on its database and at the same time be shared through Facebook and other network services. For example, you can search the information of a specific location on Gocus by using the GPS. We consider the searching process on Gocus, which has a low-context nature, an informal learning experience. And we believe that the input process of word searching on mobile devices provides tools to collect new information and acquire knowledge, which lead to an output process of viewing and listening to academic contents such as OCWs.

Castalia’s social and mobile learning platform liberates learning experiences from the closed space of a school classroom, and generates a whole new breed of learners. And we firmly believe that OCW is a major complementary element to our platform. For learners who have experienced academic learning only in the closed space of a school classroom, a learning experience used to be something that was concluded within the classroom and the class hour. They were not able to choose people to learn with. As for the new breed of learners, they are free to choose for themselves where to learn and whom to learn with, without being bound by restrictions.

Following is the further elaboration of each feature of the new learning experience.

1. The location. For the new breed of learners, learning is not something that concludes in the closed space of a classroom. While being in the same time and place with others upon learning something will continue to be important, their learning experiences do not just conclude there. By way of social networking services (SNS), they share their learning experiences with people who did not happen to be at the same place. Likewise, they share their learning experiences, in a time-shifting manner, with those who did not share the time. People deliver their knowledge related to the learning

experience as well as discoveries from it, which generates another new piece of knowledge.

2. The timing. The fact that the learning experience does not conclude in the closed space of a classroom naturally changes people's learning time. Traditionally, learning was something to be done consciously only at school. However, new learners have their learning switch on all day, and moreover, throughout their lifetime. They can accumulate pieces of knowledge not only from conscious learning experiences but even from involuntarily daily actions (such as searching) also. To them, learning is neither a boring nor a painstaking process. It is a process to meet things that inspire their "learning desire" surrounding their interest, and stimulate their intellectual curiosity.
3. The people to learn with. To the new breed of learners, whom to learn with is extremely important; it is no exaggeration to say that it is more important than the actual contents to learn. They can freely choose whom to learn with, and they probably choose those who share the interest in the topic to learn. With such people, they can accumulate combined knowledge and discoveries of everyone in the learning party through deepening discussions with regards to their learning experiences, and generate an output that has never been possible before. And the learner can enjoy the entire process. The fellow learners may suggest which content to learn, however, the content itself does not suggest the learner whom to learn with. Therefore, the choice of people to learn with is important.

Jay Cross has said, "To learn is to optimize the quality of one's networks." (Bingham and Conner, 2010) In the contemporary world where social network and mobile technology has become the default communication channels, the creation of a new learning platform and the emergence of a new breed of learners go in gear with each other. And Castalia's social and mobile learning platform will serve as the engine to start the gear running.

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# OCW Creation Studies on Four Continents

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## Abstract

The generation of open courseware (OCW) has been seen as a key element in the ecology of open educational resources (OER) and the propagation of open models in research, teaching and learning. In addition, challenges to models of closed ownership of educational resources and access to them rest in large part on the development of a culture of contribution within our communities of scholars in higher education. What do the faculty and students in our higher education institutions think of OCW? How ready are these communities to become part of this culture of contribution? Over the past 5 years a series of survey research studies has been undertaken to gauge the state of such beliefs and the critical intentions to contribute of faculty at institutions of higher education in Europe, Africa, North America and most recently Australia. These studies focused on institutions that were early in the process of developing OCW efforts locally or were still just contemplating them. In these studies, faculty and students have been asked how familiar they are with OCW and, at times, open access (OA) efforts, what they see as the advantages of such approaches, what they see as the disadvantages, and how willing they would be to contribute their own time and materials to OCW and OA. The results of these surveys answer basic questions about the readiness of faculties and student bodies to adopt elements of open scholarship culture in their own institutions. What has been found is that, across geographical divides, and even in institutions that might otherwise be considered rather traditional or conservative in their approach to education and their evaluation of faculty for advancement, significant portions of the faculty see value to themselves, their students and their institutions in OCW and OA publishing, and profess a willingness to contribute their own materials to a local OCW site. The results of this series of surveys, with an emphasis on the recent, September-October, 2011, University of Queensland survey, will be reviewed and discussed.

In addition, a project to assist anyone at any institution of higher education, or in any educational context, who wishes to develop a similar survey for their population, design a sample, apply the survey and record and evaluate the results, will be presented for discussion. In cooperation with the Inclusive Design Research Center at the Ontario College of Art and Design, a web site and set of social services is being developed to deliver such assistance and help those interested generate their own surveys and analyses of OCW efforts. A central motivation for the surveys to date has been to use such surveys to develop foundational persuasive and analytic materials for development of a strategy for local OCW projects, often in hand with OA efforts. Discussion of how these types of results can be used in such strategies, and the upsides and downsides of various approaches will be presented and discussed.

**Keywords:** OpenCourseWare, Open CourseWare, Open Scholarship, survey, Open Access, contribution, inclusivity

## Introduction to the Surveys

From 2006 to 2010 the University of Michigan, through the USE Lab headed by S. Teasley, administered campus-wide surveys to investigate educational technologies used by faculty and students, the “Informational Technology and CTools Surveys.” (Lonn, S. et al, 2008, 2010). CTools (ctools.umich.edu) is the local UM version of the open source Sakai collaboration and learning environment (sakaiproject.org).

Starting in 2007 a set of questions about faculty and student familiarity with and perceptions surrounding OCW were included in this campus survey, at the instigation of the author. In 2008 a question asking faculty directly about their willingness to contribute their materials to an unspecified, since none then existed, UM OCW site was added to the OCW section of the survey. A question asking students about their willingness to volunteer to work with faculty to create OCW was also added at this time.

In 2009 the questions were again modified to specify the Open.Michigan ([open.umich.edu](http://open.umich.edu)) site as the local OCW site. Open.Michigan is an OER site that started in 2008 and provides information about a variety of open activities at UM. It is the OCW repository for UM course materials from participating schools and departments. It has been supported in particular by the UM Medical School, which embarked in 2007 on an effort to place its entire preclinical curriculum online as OER. Recently, cooperation with other campus units, particularly the UM Library, has emerged. (Kleymeer, 2010)

### **MISI Surveys and Beyond**

Building on the UM survey instrument, the Sakai Collaboration and Learning Environment (CLE) community has also conducted online surveys concerning faculty and student perceptions and use of educational technology. “MISI, or the Multi-Institutional Survey Initiative, is an endeavor among Sakai institutions to ask similar questions of instructors and students across Sakai implementations.”(Lonn-MISI, 2010a) See the MISI site for more current information and status, a list of participants, a global map of participants, and aggregated results from some surveys (Lonn-MISI, 2010b). Direct or indirect participation in this effort, using components of the MISI/UM survey that after 2009 contained the core OCW questions from the UM survey, modified slightly by the author, as optional elements, has resulted in data on faculty and student beliefs, attitudes and intentions surrounding OCW and local efforts from schools in Europe and South Africa (Hardin, 2010; Hardin & Cañero, 2010; Hardin, Bumbaru and Pusca, 2010; Hardin, Hodgkinson-Williams, & Cox, 2011).

Over the past year, under the direction of the Center for Education Innovation and Technology at the University of Queensland, the author has worked with local faculty and staff to develop a version of the survey to be administered at the University of Queensland, in Brisbane, Australia. Comparison of the results from this Australian survey with the other 4 surveys already reported on, from the University of Michigan (North America), Danubius-Galati University (Europe), Universidad Politecnica Valencia (Europe), and the University of Cape Town (South Africa) motivate the title of this paper, with its reference to “four continents.” The results from the surveys, with some highlighting of the most recent, 2011, work done at the University of Queensland are shown below, and show consistent and widespread support at all these schools for local OCW web sites among both instructors and students.

### **Survey Results**

The survey has a simple structure which can be seen in the OCW section of any of the relevant University of Michigan surveys, available at <https://ctools.umich.edu/access/content/public/surveys/portal.html>. The respondents are given a definition of Open CourseWare (see below) and are asked if they are familiar with OCW. Then they are asked about some perceptions or attitudes they have surrounding OCW. In the present case, these have to do with their potential use of materials from a local OCW site, or the probability they would encourage colleagues to contribute to a local OCW site. They are then asked if they would contribute materials of their own to a local OCW site.

Note that faculty are not asked to contribute now, nor are students asked to volunteer to help now. This is not an immediate recruiting effort. The question is a conditional one, e.g., “I would publish” or contribute course materials to a local site, a common form of asking a question about intentions. In addition to any theoretical reasons for asking this form of the question, motivated by forms of Planned Behavior Theory (Ajzen & Fishbein, 2005), there are more practical reasons for this. The first is that no local site may exist at the time of the survey; the goal is to gauge support for a potential contribution, not one possible right now. Secondly, there is sometimes concern on the part of the surveyors that faculty might interpret this as an offer to help them put up material immediately, when insufficient, or no, support is in place for this, and thus lead to disappointment. The conditional form reduces this concern. In addition, some considering the survey as a tool for local OCW efforts are hesitant to sound too demanding, and feel that asking directly, right now, for materials might lead to faculty hesitancy, or even premature dismissal. Here the goal is rather to introduce the idea to faculty, find out how they feel in general about this, and then later, after more foundation has been laid, maybe individually, maybe in a particularly inductive context, approach them about an actual contribution of materials.

### **Familiarity with OCW**

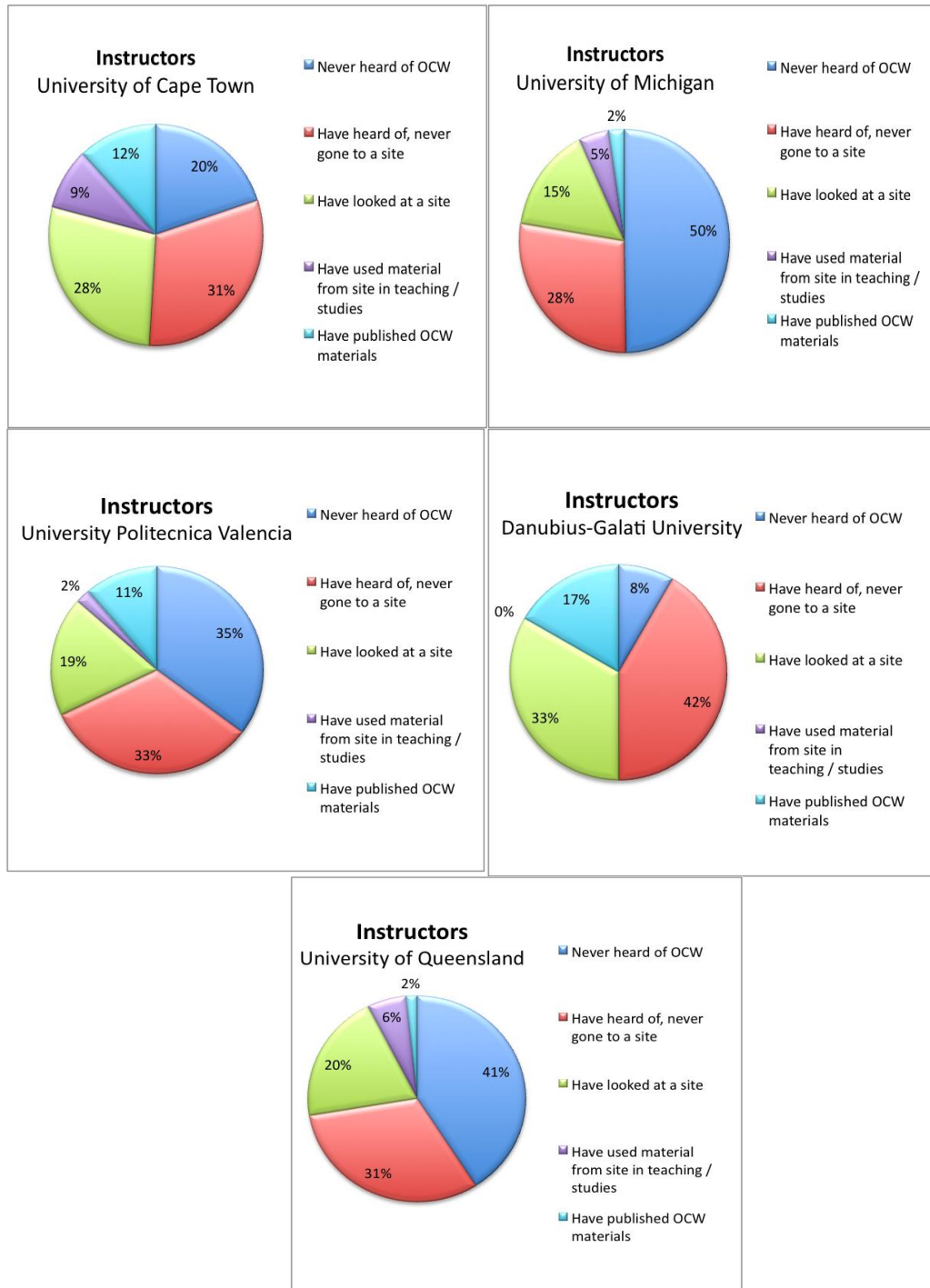
The question asking how familiar respondents were with OCW was developed in part to provide an easy to understand description of the idea of OCW, so that respondents could recognize what the topic of the question was even if they were unfamiliar with the term, and would be able to respond to follow-on questions about “OCW.” The definition varied somewhat in each survey, from a general definition of OCW and example sites, to a description of a specific local effort, depending on how far along the developmental path the particular school was. The UM, UCT and UQ versions are given here. For an early UM survey: “Open CourseWare (OCW) is a learning technology that allows faculty to post their course materials (e.g. syllabus, reading lists, lecture notes) on a publicly available website.” For UCT: “Open Education Resources (OER) websites, also known as Open Courseware (OCW) sites or Open Content sites, allow lecturers to post their course materials (e.g. lecture slides, podcasts, course outline or reading lists) on a publicly available website”. The UQ survey introduced the notion of OCW this way: “Open CourseWare (also called “OCW”) allows university teachers to post their course materials (e.g. syllabus, reading lists, lecture notes, assessments, audio and video, etc.) on a publicly available website for everyone to see and use, all over the world, whether or not they are enrolled at any institution as a student. Open CourseWare has been adopted by a number of institutions of higher education worldwide. There are now Open CourseWare sites at over 200 institutions around the world. One such site is MIT's Open CourseWare site (<http://ocw.mit.edu>), where the majority of MIT teaching staff have contributed materials to their institutional site.” In each case, respondents were then asked how familiar they were with OCW.

### **Instructor familiarity with OCW**

Across the schools instructor familiarity with OCW was often meager, with those who had either “Never heard of” or “Heard of but never visited a site” running from 50% to 78%, with the University of Queensland, the most recent survey, done in September/October, 2011, at 72% (Figure 1). It is simply the case that many faculty members are either not aware of OCW at all, or, having heard of it, have not been interested enough to visit a site. There were considerable differences between the schools when looking at the remaining categories, those who “Had looked at an OCW site,” “Used materials from an OCW site,” or “Contributed materials to an OCW site.” Here the respondents’ percentages ran from a low of 22% for UM to a high of around 50% for Danubius and UCT, with 28% of those responding in these categories at UQ.



**Figure : 1 Instructor familiarity with OCW**

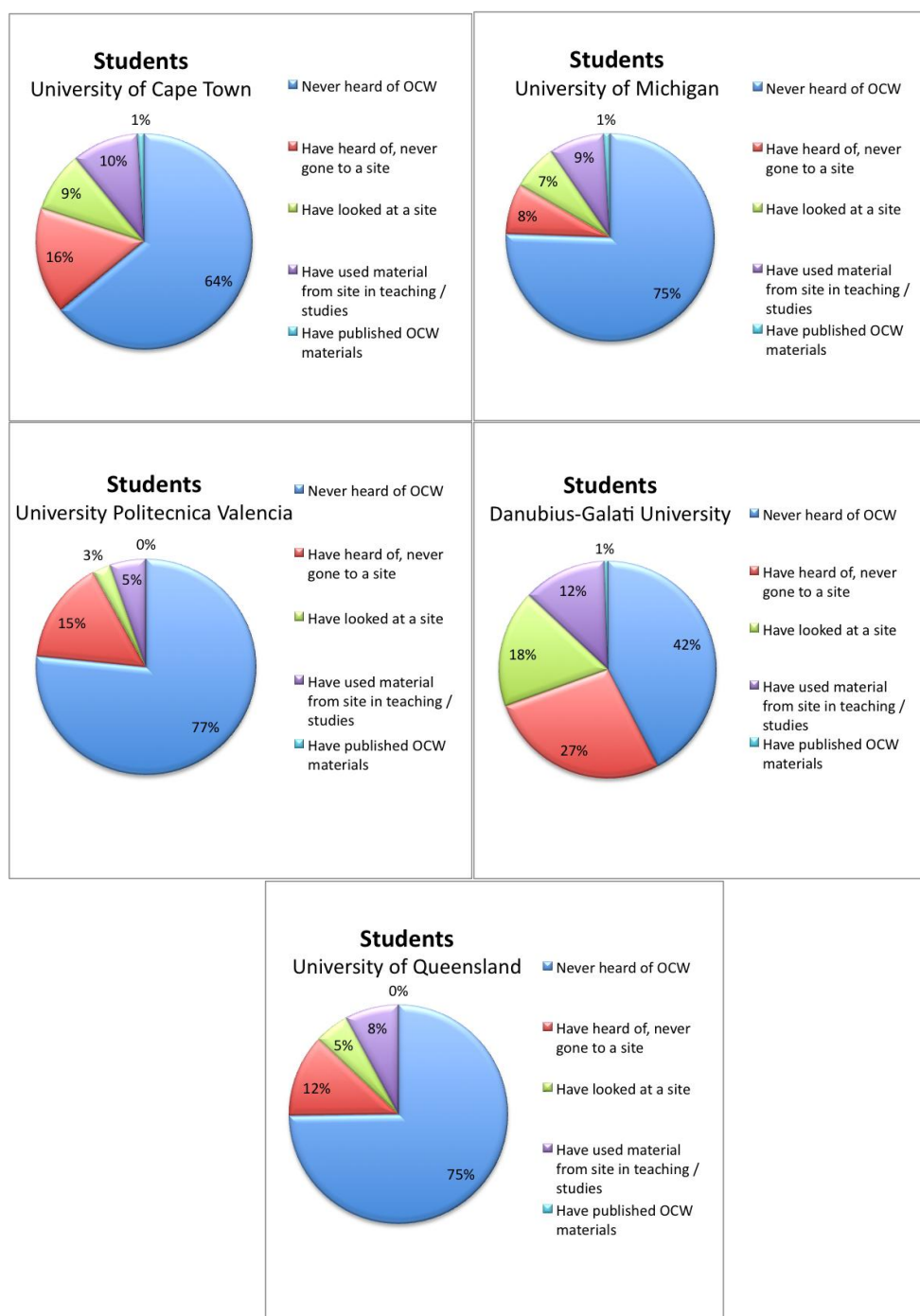


### Student familiarity with OCW

Students at the institutions are not that familiar with OCW, either, in fact to an even greater extent than faculty. Between 77% and 42% of the students had never heard of an OCW site, with 75% of those at UQ unfamiliar with the notion. When we combine the percentages of

those who had “never heard of” and those who “had heard of but never visited” an OCW site, we see from 68% to 90% of the students fitting this description, with UQ at 87% (Figure 2).

**Figure 2: Student familiarity with OCW**



### Use of OCW

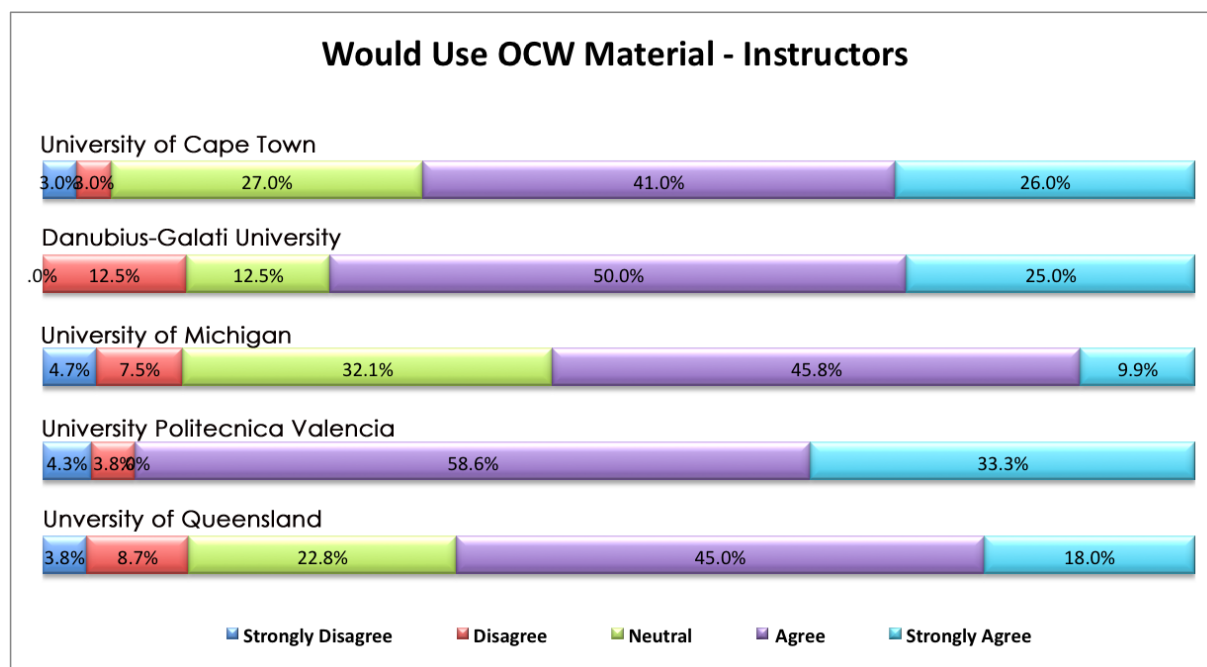
Instructors and students were asked directly if they would “ use course materials or other educational resources from [a local site],” to probe their interest in use of locally produced materials, in contrast to the retrospective question about general familiarity with and use of OCW posed earlier.



### Instructor use of OCW

When asked whether or not they would use material from a local site, the response from instructors was generally positive. Sixty-seven percent of staff at UCT, 56% at UM, an overwhelming 92% at UPV and 75% at DG strongly agreed or agreed that they would use OCW, and 63% of UQ instructors (Figure 3).

**Figure 3: Instructor potential use of OCW**

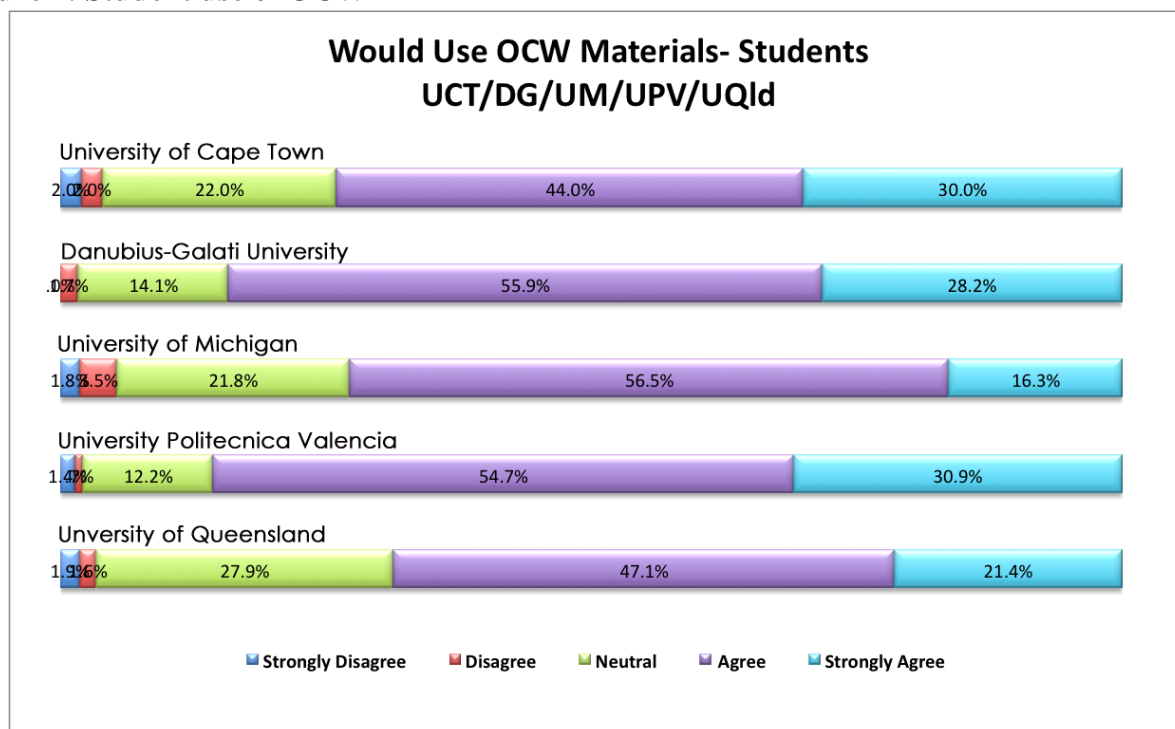


In addition to the large degree of interest in using OCW, overall there is also less uncertainty about using OCW than there is about publishing OCW (see below). Twenty-seven percent of staff at UCT are uncertain about the use of OCW (responded “neutral”), slightly more staff at UM are uncertain (32%), but only 13% are uncertain or neutral at DG, and 23% at UQ. At UPV a four-point scale was used that did not provide a “Neutral” choice. This may have contributed to the large proportion who responded with “Agree,” though it also may provide us with information on which direction “Neutrals” lean on this question (see Hardin & Cañero for discussion ). In a similar vein, staff are less likely to actually disagree with the notion of using OCW than they are about publishing OCW. Only 6% of staff at UCT, 12% at UM, 8% at UPV, 13% at DG and 12% t UQ either strongly disagree or disagree that they would use OCW. So while, as we shall see, considerable numbers of instructors at the institutions would agree or strongly agree when asked to contribute their materials to a local OCW, even more would agree to use OCW materials.

### Student use of OCW

When students were asked whether or not they would use material from a local site, the response was even more positive than the responses of the instructors. Seventy-four percent of students at UCT, 73% at UM, an overwhelming 86% at UPV and a whopping 94% at DG strongly agreed or agreed that they would use OCW (Figure 4). This question was not asked on the UQ questionnaire, though a combined measure of specific use valuations of OCW (in general, not specifically from a local site) shows that students expect a high level of use, 68% saying they Agreed or Strongly Agreed they would find use valuable, with 28% falling in the Neutral category, and only 4% saying they Disagreed or Strongly Disagreed with the question. When exposed to the idea of OCW, student responses are quite positive overall.

**Figure 4: Student use of OCW**



### Contribution to OCW

To this point we've seen that many faculty and students are not very familiar with the idea of OCW, though they have generally favorable responses to questions about using OCW when it is described to them, and that this condition is broadly reproduced across the representatives of all 4 continents in our studies. How does this translate into interest in actual participation in a local site, in contributing materials to that site for faculty, or, for students, in helping their instructors place course materials on a local site? Would the low levels of familiarity lead to low levels of intention to create and contribute materials, or help put them up, or would the possibility of envisioned functionality and benefits encourage intentions to contribute?

The contribution question is obviously a central question, and it is one that is asked directly in the studies. The question is phrased in terms of a local site to add to its concreteness and help engage the respondent in an actual context of action. If no local effort or site exists then the question can contain a reference to a local site, and can be asked as it was at UQ, after asking the respondent to assume a local site: "I would publish my course materials and other educational materials on a UQ Open Courseware site."

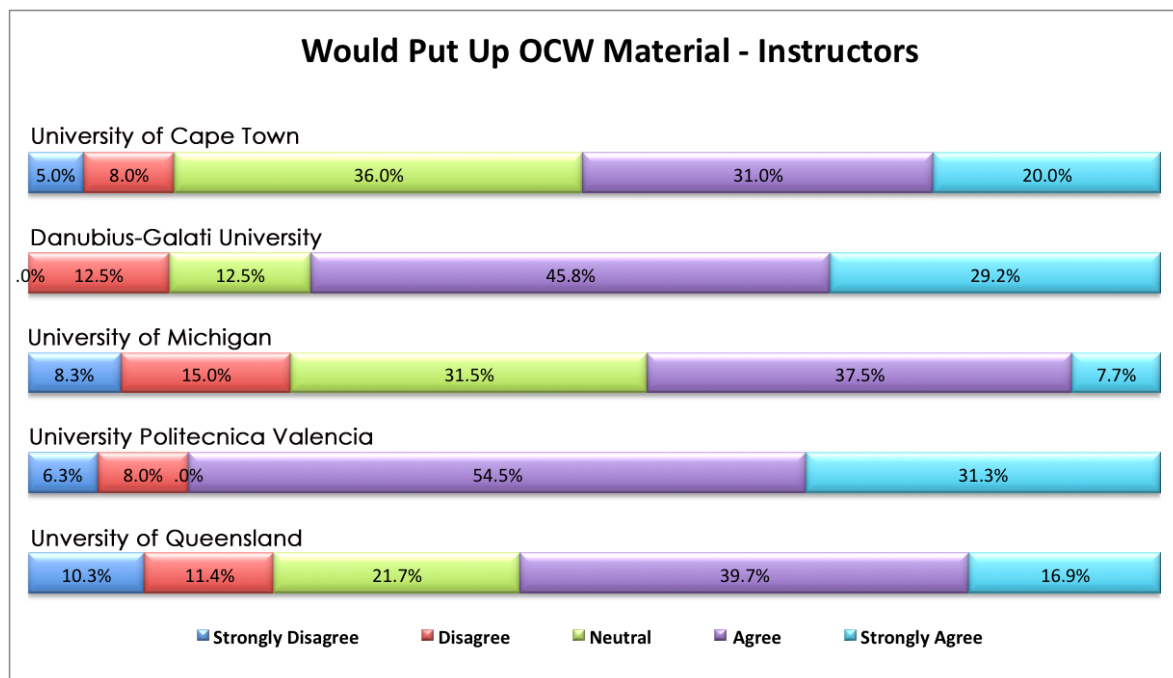
In the case of UM the local OCW site, then under development, was described in a later survey thus: "Open.Michigan is a university-wide initiative to openly share the University of Michigan's knowledge, educational resources, and research with the global learning community. As a part of this initiative, Open.Michigan publishes course materials and other educational resources on its website with Creative Commons copyright licenses." The instructors were then asked to indicate their level of agreement with the statement: "I would publish my course materials or other educational materials on Open.Michigan." In the case of the UCT site the description was: "UCT OpenContent is a new university-wide initiative which is starting to share a selection of UCT's knowledge and educational resources with the global learning community on a public website."

### Instructor contribution to OCW

When asked in this fashion, from 45% at UM to 51% at UCT to 57% at UQ to 76% at Danubius, to a whopping 85% at UPV (Hardin & Cañero 2010, again, see discussion), of the

instructors at these schools agreed or strongly agreed that they were ready to contribute their materials to a local site (Figure 5). In addition, a sizable number at UM (31.5%), for instance, 36% at UCT, and 22% at UQ, did not disagree with the notion of contributing their own materials, but were uncertain about it, responding with “Neutral”.

**Figure 5: Instructor contribution to OCW**

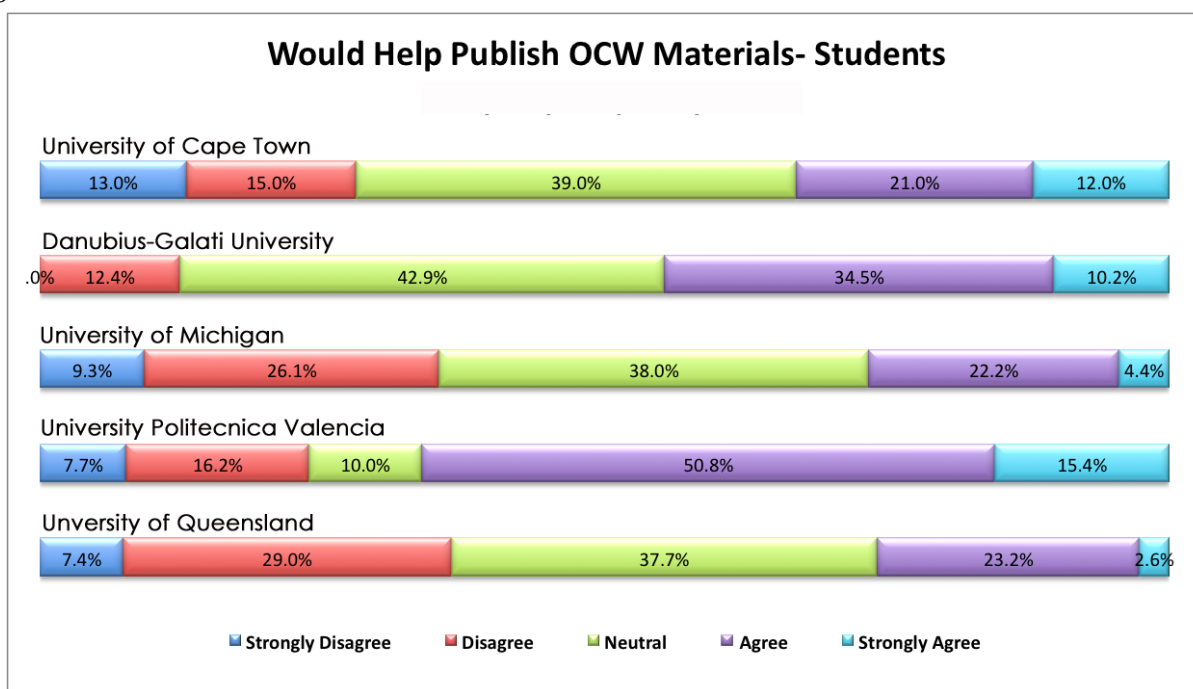


In every case there is a considerable foundation of support for local OCW projects in the critical area of materials contribution. In addition, there is often a sizable bloc of instructors that are not sure about their participation, and only a relatively small number who are in disagreement with the idea.

### **Student contribution to OCW**

In each of the studies students were asked to indicate their level of agreement with the statement: “I would volunteer to help instructors publish course materials and other educational resources on [local site]”. At UQ this became: “I would volunteer to help university teachers put course materials and other educational resources on the OpenUQ site”. This question was meant to probe students’ willingness to support the contribution of their teacher’s course materials by actually helping their teachers clean up and move the materials to the local site. The questions yielded the following responses, combining the Agreed and Strongly Agreed: from UPV (66%), DG (45%), UCT (33%), UM (27%) and UQ 26% (Figure 6).

**Figure 6: Student contribution to OCW**



How this professed student interest in supporting local OCW efforts can be harnessed and channeled into effective project work remains to be seen, and is the subject of two papers mentioned here (Cox, 2012; Tromp, 2011). At this point, the results simply show the existence of such potential resources.

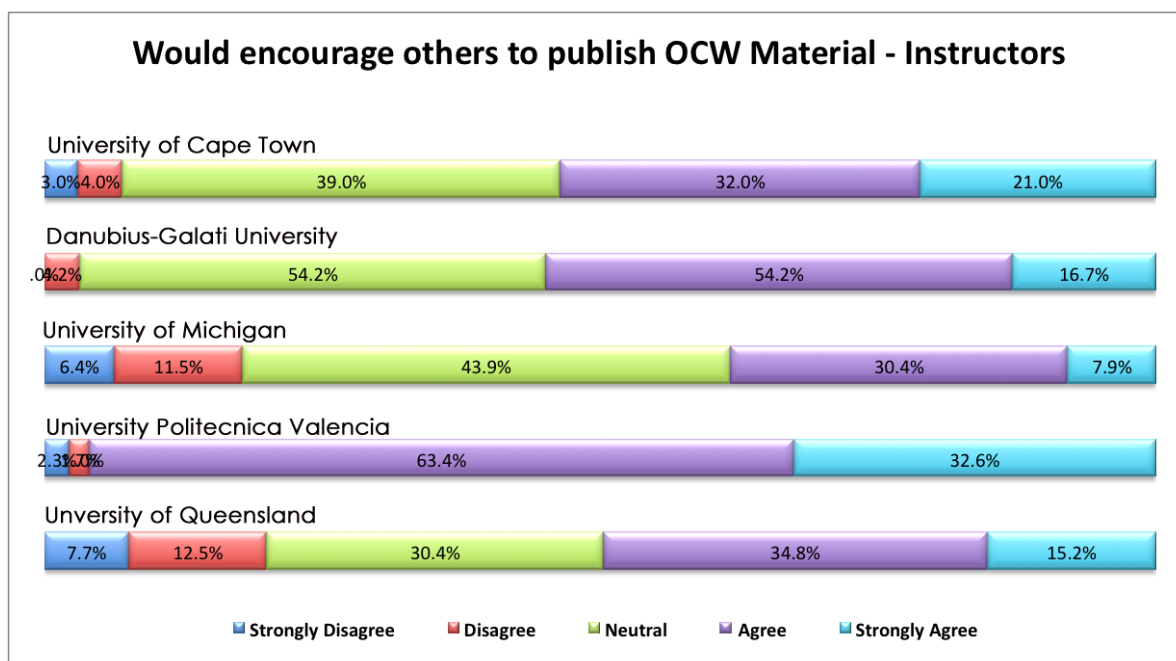
### **Encouragement of others to contribute to OCW**

Another question was posed to investigate one more dimension of this emergent culture of contribution, by asking to what extent instructors and students (in all cases but one) would encourage others to contribute, in the case of faculty, or use, in the case of students, OCW from a local site. At UQ the question was phrased in a standard, for this series of surveys, and straight-forward manner: “I would encourage my colleagues to publish their course materials or other educational resources on a UQ Open Courseware site.”

### **Instructor encouragement of contribution of others to OCW**

Respondents from all five institutions were generally positive in their responses to the question of encouraging colleagues. Fifty three percent of staff respondents from UCT, 50% from UQ, 38% from UM, 96% from UPV and 71% from Danubius either strongly agreed or agreed that they would encourage their colleagues to publish course materials ( see Figure 7).

**Figure 7: Instructors encouragement of others to contribute OCW**

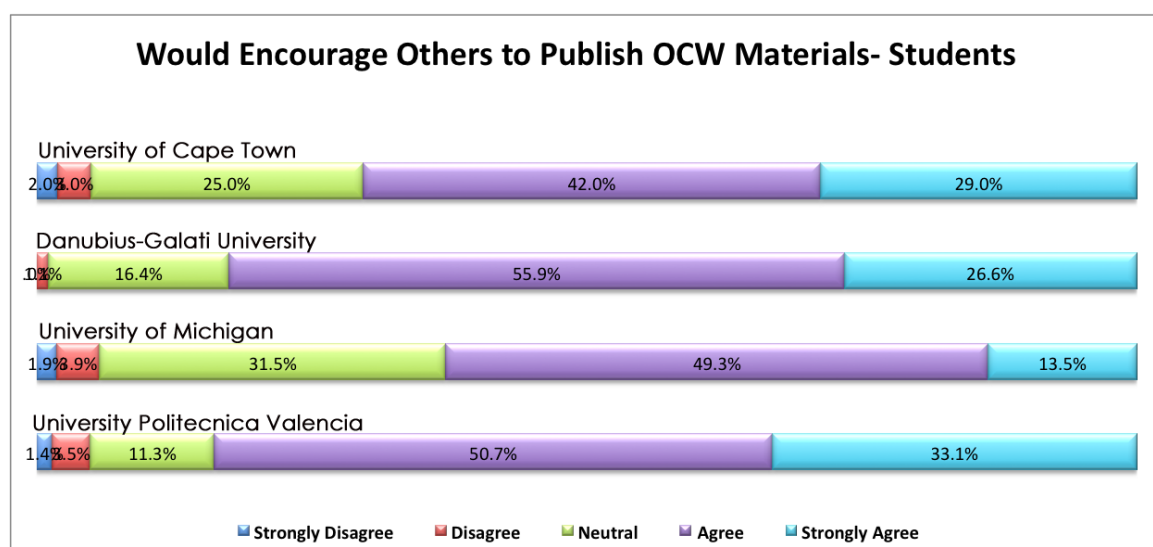


In some places, there were increased numbers of faculty that were unsure about this proposition, compared to the numbers willing to contribute their own materials. At UCT 39% of staff were uncertain about whether or not they would encourage their colleagues to publish their course materials, while nearly 44% at UM indicated that they were uncertain, “neutral,” on this issue. The number of staff not interested in this role of advocate differed among the schools, from a mere 4% at UPV and a similar 4% at Danubius-Galati, to 7% at UCT, 18% at UM, and 20% at UQ, either strongly disagreeing or disagreeing.

### **Student encouragement of contribution of others to OCW**

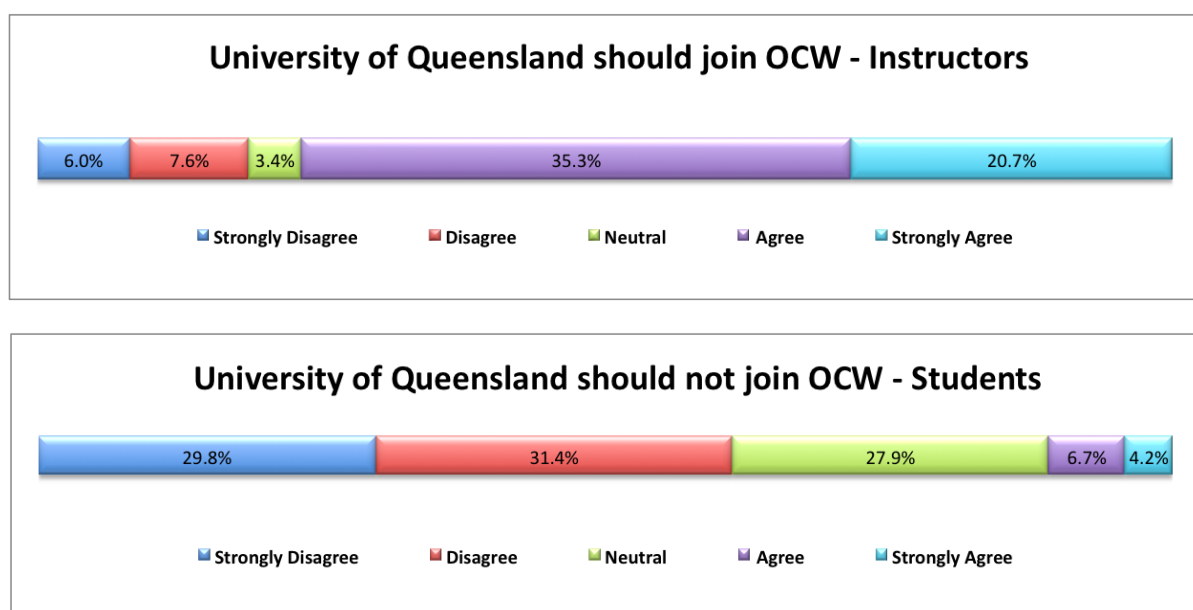
Generally, students were very positive about encouraging others to use local OCW. Seventy one percent of staff respondents from UCT, 63% from UM, 84% from UPV and 83% from Danubius either strongly agreed or agreed that they would encourage their colleagues to publish course materials (Figure 8). The question was not asked on the UQ survey.

**Figure 8: Student encouragement of contribution of others to OCW**



## Support for Institutional Effort

The most recent survey, that done in 2011 at the University of Queensland in Brisbane, Australia, asked a new question, which gets to the individual's support for local OCW efforts at the institutional level. The “contribution question” discussed above asks about intentions to support a local OCW site through individual efforts, through the contributing of an individual's own course materials in the case of faculty, or through contributing time and effort through helping prepare and place those materials on the local site in the case of students. The UQ study included another question for faculty: “I think that UQ should join other institutions of higher education in participating in Open Courseware.” And for students: “I do not think a university like UQ should be part of Open CourseWare.” The student question was posed as a negative purely for methodological reasons. These questions get at the support of these groups for going beyond personal contributions, and toward mobilizing institutional support for OCW.



As can be seen from the graph above, there is extensive support for such institutional commitments among the teaching staff at UQ, with 56% of them Agreeing or Strongly Agreeing that “UQ should join other institutions of higher education in participating in Open CourseWare,” and only 14% Disagreeing or Strongly Disagreeing. Similarly, 61% of the students think UQ “should be a part of Open CourseWare.”

## Conclusion - Support for the Community of Contribution

These results mirror earlier ones, and can be well summarized by repeating a section from the conclusion of one of the earlier papers on OCW creation studies, comparing 4 of the 5 schools discussed here (Hardin, Hodgkinson-Williams & Cox, 2011):

“These findings provide support for the notion that while OCW is not that well known among university faculty and students presently, the idea of OCW is very appealing. At even the least responsive of the institutions investigated here, there is a considerable group of the instructors, approaching or exceeding half of those responding in all cases, who are ready to participate as contributors of their materials to local efforts. This should be recognized as a supportive base that already exists at all the schools surveyed. Likewise the results point to not only clear majorities who, apparently realizing the benefits of such local resources, would use these materials if they were available, but also large numbers who would encourage their colleagues to participate in the culture of contribution too. There is also a large body of students who not only recognize the value of such open materials to their own studies, and

would encourage their colleagues to use such materials, but are ready and willing to help with the preparation and placing of these materials on local sites. Support for contribution of time and energy from the student populations at these institutions toward realizing the culture of contribution at their own institutions is apparent. Understanding how to appropriately mobilize these resources is less apparent.”

“These results reflect a large demand for OCW in our university communities, a demand whose presence is not always recognized in emerging efforts, either among the organizers of OCW initiatives nor among those whose support they seek. Concern over faculty support for OCW is one of the potential roadblocks to OCW efforts locally. One value of the survey work to date across these institutions has been to make this large community of support for OCW visible, both locally and globally. The survey work done here can provide useful understandings of local levels of support for OCW projects.”

These results were reproduced once more, on the 4<sup>th</sup> continent where this survey has been administered, Australia, at the University of Queensland. In addition, it is, not surprisingly, clear that the willingness on the part of faculty to contribute is a good predictor of faculty support for institutional commitments to OCW efforts ( $\beta=.85$ ,  $p<=.001$ ). Where faculty evince willingness to contribute their own materials, there is also support for institutional commitment to OCW.

### **Supporting OCW Survey Work**

There are murmurs of movement on the 5<sup>th</sup> continent, South America, and seeing results from institutions there would be both interesting and useful. The establishment of a web site to support local individuals and groups in developing localized versions of the survey will perhaps encourage others like those in South America to use this method as part of their efforts to bring their schools, and the world, the benefits of OCW communities of contribution. We turn now to a discussion of this web site.

Previous presentations here and at other conferences have raised the idea of a place, usually thought of as a web site, where these studies could be gathered so that schools and other institutions interested in local OCW efforts, or in early stages of developing local efforts, could learn from the work of others and the research done in this area. Here such research could be gathered together to make it easier to find and elaborate, so researchers themselves might find it easier to compare their work with others', hopefully encouraging expanded efforts in these areas. In addition people working on local OCW or OER projects also could find support for their own surveys, and knowledgeable researchers to help them with such efforts. To date little has come of these ideas. The current efforts I'll describe here are an attempt to jump-start this kind of research support, discovery, exchange, and discussion site. The web site discussed is expected to be up and running by the time of the conference (deadlines make things happen), and is meant to be a starting point for publicizing efforts around understanding how the members of institutions of higher education, especially, think about open technologies and their participation in them. Eventually encompassing introductions to similar survey research done in a number of areas encompassed by the term Open Scholarship, including OpenCourseWare, Open Access publishing, Open Textbooks and Open Data, but initially focusing on OpenCourseWare, the site hopes to encourage more research in these areas, encourage cross-domain discussion, and, critically, provide support for individuals or groups at institutions interested in learning about their own local populations through such surveys.



## Two Directions for the Site: Research and Practice

### Research

These conferences have seen a number of papers and presentations concerning OpenCourseWare's development in institutions of higher education, and this conference is much the same. Some examples below touch in whole or in part on the question of faculty creation and contribution of OCW materials, and student support for a campus OCW effort:

An Expectancy-Value Analysis of OER contributors at the University of Capetown;  
Cheryl Hodgkinson-Williams

“Why would you do it? ... would a student actually be interested?” Understanding the barriers and enablers to academic contribution to an OER directory; Glenda Cox

Openness in the research and teaching domains in higher education: the relationship;  
Laura na Czerniewicz

Disciplinary and Institutional Perspectives on Open Educational Practice in Art, Design and Media Studies: Opportunities and Challenges; Sarah Atkinson, John Casey, Chris Follows, Debbie Flint, Stephen Mallinder

These studies are somewhat distinct from questions of OCW or OER use, or reuse, focusing more on the generation of OCW materials, the motivations for faculty contribution or student participation in OCW efforts, ways of looking at openness in multiple academic domains, or the issues surrounding OCW in a particular discipline. They focus on institutions of higher education, and contribute to our understanding of how to go about describing and building local communities of contribution. Encouraging and publicizing such research would be one of the main goals of the site.

So one of the tasks of the site would be to gather these papers and presentations so that they would be easy to find and use in the furtherance of similar research, perhaps providing synopses that focus on their relation to creation and collaboration studies. The site would also try to update users on new contributions to the work in this area, by monitoring indexes and conference proceedings and supplying an RSS, Twitter or other notification service to users as new citations are found or upcoming presentations are announced. The site might also become a place for conversations and connections surrounding the work done or that underway among current practitioners, as well as those new to the area and interested in doing related research.

In addition, while it is difficult to get the necessary permissions, and there are well-known problems with developing open data from studies of human subjects, efforts to make properly, and effectively, anonymized data available for reanalysis would be discussed. The reanalysis of open data carries with it the same kind of benefits as the reuse of open content, and probably more, and is a part of the complex of practices that go to make up the area of Open Scholarship. Of particular interest would be methods employed by researchers who have been successful in actually producing such openly available data sets from their work in this area. I know of none to date.

The research that has been done in parallel with the OCW surveys on Open Access beliefs, attitudes, intentions and actions would be a good candidate for the first branching out from the core of OCW investigations. Finding mutually supporting models for expansion in the two areas would be valuable for our understanding of the dynamics between these activities in the academy, and the larger realm of Open Scholarship. Looking at the research together would be required to understand the relationships between them, and contribute to the development of strategies to leverage them, or not, in local contexts. The same is the case for Open Textbook efforts in higher education, where some surveys already exist.



In each of these areas, developing a place for unpublished discussion papers and informal reporting of results, such as student theses that result from participation in the surveys like “Why Do People Share Content? Using the Theory of Planned Behaviour and Moral Beliefs to Identify Why Students Support Sharing Course Material” (Tromp, 2011), in short providing a place for the conversation to be elaborated, could prove useful in advancing the work. The author is currently looking for sites that serve these kinds of functions in focused areas of investigation like that discussed here and welcomes any examples, or suggestions.

### **Practice**

The site equally intends to be a resource to those actively pursuing efforts in OCW/OER at the local level, providing them with easy access to the existing research, and encouraging them to contribute to the community's store of results and knowledge by providing support for local surveys of the type described here, and sharing the results. One goal is to generate and provide means for the research oriented and practicing OCW communities to provide complementary resources and support for each other. For instance, it is not easy to carry out campus-wide survey research of the quality that provides usable results. Local resources are often limited in early stages of OCW development, both in the availability of expertise and in the availability of monetary resources. The people interested in developing OCW efforts could benefit from tapping the expertise and materials of those who have already developed and undertaken surveys. The MISI example shows that putting a survey document up online, describing the stages of survey and sample development, helping out with questions from staff at interested institutions, and finally providing synopses of aggregated data, can be both successful and useful.

There are other examples of communities that have developed resources to do similar, or more extensive, survey support. LibQual+ is a site that was started by academic researchers and has developed into a service for libraries to do surveys of their users' perceptions of the quality of library services (libqual.org). Hundreds of libraries have made use of the services at LibQual+. For a school or other institution interested in gathering information of the level of support for an OCW, OA, Open Textbook or OER initiative the site, like LibQual's could provide step-by-step procedures, or comprehensive support. It would start by discussing the reasons for doing such a survey and provide some case studies of others who have done them. Then it would move to providing clear descriptions of the existing survey as a unit and/or the pool of questions that have been created by the various surveys in the past, which could be drawn upon to construct a local version of the survey; then to providing assistance in creating such a local instrument, noting the common pitfalls; then to defining and identifying sampling frames and drawing samples, administering the survey to the local populations, and analyzing the results. As a source of information, and of direct support in some cases, and a source of answers for questions, the site could act as a guide through all the stages of a survey project.

### **Using the Results**

Actually carrying out the surveys is hopefully only the first step in developing support for a local OCW effort. Using the results as a means of arguing for a local initiative, or targeting portions of the community that have shown through their responses to be particularly interested, or combining other local information resources with the results to further local efforts are all activities that could benefit from sharing experiences. A number of the institutions that have carried out the surveys are engaging in or preparing follow-on surveys, to gauge the extent of success of local efforts, or see how effective they have been in particular areas.

For instance, Emily Puckett Rogers, Open Education Coordinator, describes use of the survey results at the University of Michigan, showing the evolution of such work on that campus:

“The Open.Michigan surveys, based on the original CTools surveys about OpenCourseWare, have served to provide guidance for our outreach efforts and in understanding the variety of communities on our campus. We discovered that, while many people were not familiar with the terminology of OCW or open educational practices, often they were already sharing resources and willing to share their work even more widely.

We have since organized the survey results into three broad categories: Health Sciences, Literature, Science and Arts, and Professional Schools and Colleges (graduate). These divisions will enable us to target support and training to different units on campus that often perceive education, research, and content in different ways. While we do not have a university-wide survey planned for the near future, we will be developing smaller, more targeted surveys aimed at further understanding our community. These surveys will be developed based on the responses from the earlier rounds.” (Puckett Rogers, 2012)

Providing updates on follow-up activities to surveys such as this, and the evolving methods of local OCW/OER advocates would be another useful component of the site, and provide connections between practitioners.

### **Inclusivity and Open Technologies**

The site therefore is focused on both furthering theoretical understanding of OCW activities and helping local projects around OCW use those understandings, and in turn contribute to them. Recent conceptions of this project, however, have included an added dimension: the inclusion of discussion and research on the overlap between open educational resources, particularly open courseware, and the range of accessibility issues and dynamics encompassed by the field of inclusive design (Treviranus, 2010a, 2010b). The author has a developing interest in those places where open scholarship activities intersect with problems of accessibility, resulting in an expansion of the notion of “open” to include creating ways of overcoming barriers to the use of open content that stem from the creation of materials that a significant proportion of the population simply can't see, hear or navigate through.

There are a number of places where concentration on notions of “open” in one area, can realize increased inclusivity in another area. The use of open copyright licenses, for instance, translates into increased ability for transformation of materials into forms that are accessible to a wider population of learners. Likewise, some approaches to the design of materials emphasizing accessibility, and hence the inclusion of wider communities in the use of those materials, can expand the impact of open contents. Research on the mutually reinforcing aspects of these approaches would be valuable, if only to surface areas of mutual interest. It could investigate places in institutional contexts where efforts to provide OCW, for instance, might benefit from collaboration with accessibility efforts, and vice versa. We do not know how faculty, and supporting educational technologists in our institutions, for example, might view or contribute to efforts that explicitly approached such dual goals. Would the combination be viewed as creating further cost barriers, or providing significant off-setting benefits? How cognizant are institutional members of emerging technologies and methods for incorporating cross-platform and individualizable content in the development or translation of educational materials, such as the Fluid Project ([www.fluidproject.org](http://www.fluidproject.org)), and how do open notions of return on value feed into these understandings? If one goal of providing open content is to increase the reach of the authors' influence, do authors see access to, for example, the increasing population of aging learners a real benefit? Do their institutions?

This work is in early stages, as part of the author's studies at the Inclusive Design Research Center at the Ontario College of Art and Design (<http://idrc.ocad.ca>). The first step is to get a version of the site up and to start iterating. For an update on the site, which will be found at

mujoresearch.org, and the slides from the conference presentation associated with this paper, see [http://www-personal.umich.edu/~hardin/Talks/OCW\\_Surveys/](http://www-personal.umich.edu/~hardin/Talks/OCW_Surveys/)

### Notes on Surveys:

From Hardin, J., Hodgkinson-Williams, C. and Cox, G. (2011):

“The surveys reported on here vary in their sample strategies and their sample sizes, and in their response rates. Below we report the sample sizes and response rates for the surveys involved, for both the staff and student surveys.

In the University of Michigan survey for 2010 “all instructional faculty were invited to respond (n=7,626). There was a 13% response rate to the survey (n=1,017). A random sample of 25% of the student body, stratified by college/department, was invited to respond (n=9,095). There was a 16% response rate to the survey (n=1,415).” (Lonn & Teasley 2010)

For the 2010 survey all UCT staff were invited to respond (n=3170). This total includes academic and administrative staff. There was a 6% response rate to the survey (n=174). All students were invited to complete the survey (n=24 887). There was a 10% response rate to the survey (n=2474).

For the Danubius survey 1953 students and 98 faculty were invited to respond. The student response rate was 9,06% (177 students responded) and instructor response rate was 24,49% (24 faculty responded).

The Universidad Politecnica de Valencia survey used a random sample of 30% of the instructors (n=800) who were invited to respond, and a random sample of 5% of the students (n=1,920) stratified by college who were invited as well across the set of OCW questions. They had responses from 230 instructors and 186 students; which resulted in response rates of 28.7% for instructors and 9.7% for students.

As can be seen from the varying sample sizes and response rates, some of the surveys provided data that allows for more confident generalization than others, and some provided more possibility for detailed analysis of subsets of the population than others. In this review, when comparing the institutions, we limit ourselves to discussions of the respondent populations, and the results concerning the main populations, teaching staff and students. Other reports go into more detail on sub-populations, such as teaching assistants vs. tenure-track teachers, or younger vs older staff (Hardin 2010).”

The University of Queensland survey used a random sample of staff classified as having teaching as their focus, where sample size was 1497. Complete responses were received from 189 respondents, which gives a response rate of 12.6%. The student survey was sent to three random samples of students where combined sample size was 4270. 349 completed surveys were obtained, giving a response rate of 8.1%.

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# **OCW Universités de France**

Clara Danon, Sophie Touze

Paper not submitted

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## **OER at the Heart of Curriculum Development**

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### **Abstract**

Since establishing its institutional Repository with JISC Start Up funding in 2007, Leeds Metropolitan University's strategy has been that this should be multi-purpose repository, for both open access research and learning objects. The University has been actively involved in the UK Open Educational Resource "movement" since the Phase One funding call in 2009. Through the JISC/HEA funded 'Unicycle' project we successfully kick-started the creation and collation of open resources to be made available through Leeds Metropolitan's Repository and established workflows and good practice associated with this. Since then the institution has continued to develop the Repository's functionality, and has also increased the release and use of OER within the institution beyond the funded life of the project, demonstrating Unicycle's sustainable model.

Our granular approach to OER use has been a persistent theme through a number of staff development activities. The institution is now embarking upon an exercise to refocus the undergraduate curriculum, and through this process course development teams are being encouraged to consider the use of Open Educational Resources. We believe that we are one of the first UK institutions to engage every undergraduate course in identifying where they might use OER to supplement and extend the learning materials they already use. We have put OER at the heart of our curriculum design using it in a complementary form to enhance the tutors own materials, to offer alternative perspectives, to broaden the range of learning opportunities offered to students, and thereby increasing the quality of the learning experience..

This paper will be of interest to learning technologists, academic staff, repository managers and information professionals as well as senior managers involved in learning and teaching strategy development. The paper covers:

5. The benefits and outcomes of a strong collaboration between the Centre for Learning & Teaching and the Libraries & Learning Innovation teams in establishing a range of workshops, training materials and resources to support course teams in understanding the range of Open Educational Resources that are available to them, their potential to enhance the curriculum, and how course teams may be supported in accessing these resources and embedding them in their teaching;
6. An outline of how the e-learning infrastructure has been developed within the University to ensure that all stakeholders are easily able to identify and access high quality and relevant open educational resources;
7. An analysis of the relative success the teams have had in encouraging the embedding of OERs to support the Leeds Met graduate attributes alongside subject specific content;
8. Exemplars of how OERs have been integrated within modules across a range of subject areas, alongside tutor-created and commercially available materials to enhance the learning experience.

This is a case study paper and aims to tell a narrative story of our experience using OER as part of the embedding of Open Education within our institution.

### **Keywords**

OER, Open Educational Resources, Unicycle, Leeds Metropolitan University, Curriculum, Embedding, Refocus, Granular, Repository, Library, Academic Librarian, Learning Technologist, E-Learning, Centre for Learning & Teaching.

## **Background**

In 2009 Leeds Met embarked on a Phase One JISC/HEA funded project to develop an institutional OER repository (Unicycle). At the beginning of this project Leeds Metropolitan University had recently developed an institutional repository to make available its research output. Also at this time Leeds Met wished to explore the sharing of materials across institutions in order to be more effective and efficient in the creation of learning materials, a move away from the “cottage industry” experience of staff working in silos.

The OER call provided an opportunity for Leeds Met to identify materials of value to other institutions and partners and release some of our well-established materials currently located on our user authenticated skills for learning site (<http://skillsforlearning.leedsmet.ac.uk>) under an open license.

We felt that possible benefits of using OER and engaging in this approach to sharing would benefit staff and students by providing access to learning materials, thus increasing staff efficiency (so that they are not having to continually develop resources) and allowing them to concentrate on the design of a good learning experience rather than the creation of all the learning materials.

Liyoshi & Kumar (2008) suggests that the next revolutionary step is to use the technology associated with OER & increase the quality of learning & teaching.

In turn we hoped that this approach will in the longer term prove effective in increasing the quality of the learning experience for students, as staff will have access to a wide range of teaching and learning materials from which to design and construct a high quality learning experience.

As part of this project we wished to set the foundations for a long term OER strategy across the institution, which would enable us to continue the OER release after the funding period. The institution had not engaged in the release of OER material prior to this project, we were aware however that some staff were already making materials available in the public domain at an informal level but not under any official OER context. Some members of the universities Teacher Fellow network had already been individually using materials on a small scale released as OER's (most notably materials from Open Learn and MIT Open Courseware) but again there was no wider implementation or strategy on engaging staff in OER access. We hoped that the project would enable us to widen awareness of OER across the institution and encourage staff to engage in both the use and release of OER materials.

Kraan et al (2008) identify that OER projects are cultural as much as they are educational, in that they give users “an insight into culture-specific methods and approaches to teaching and learning”

The 12 month project laid the foundations for us to be able to identify the need to continue staff development in relation to IPR and the use of OER in transforming educational approaches, whereby academic staff are encouraged to focus energies in using OER material to build an effective and quality learning experience for students, rather than feeling compelled to “create” all of the learning material for the module.

## **Refocusing the Curriculum**

Leeds Metropolitan is currently undertaking a review of all undergraduate courses with a view to:

9. ensure all courses are more flexible and focused on student needs and demands improved to provide a clear course structure with more shared modules to help guide students' studies designed to offer all students the opportunity to participate in work-related learning designed to distribute assessments more evenly across the academic year **delivered through consistently good teaching underpinned by effective, high quality resources.**

The final bullet point refers directly to a process of engaging staff with the “resourcing of the curriculum”. This is a staff development process that encourages staff to resource their curriculum delivery using 3<sup>rd</sup> party resources to support their own. It is important to highlight here that these resources are not a replacement for the academic staffs’ own content.

The Institute for the Study of Knowledge Management in Education have establish a range of courses that “develop and train educators in the creation, use, and sharing of OER in order to empower teachers to leverage their expertise, improve their practice, and deepen student learning based on open collaborative practices.” - (ISKME) - 2012

As part of the staff development activities we have already identified some other key areas where the use of 3<sup>rd</sup> party resources can bring benefits:

- Enhances the module delivery
- Widens the perspective & offers alternative viewpoints
- Accommodates other learning styles & diversify the range of materials
- Saves staff time
- Enhances staff’s own content
- Adds value

In order to facilitate this we have identified 3 core resource types. Firstly those resources that

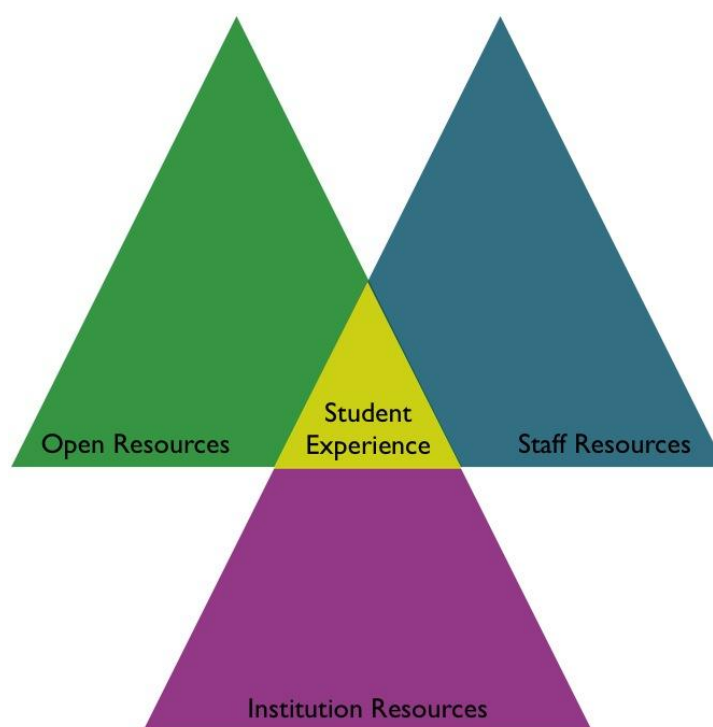


Figure 8

staff create themselves, secondly those that are “open” (clearly identified as being open through cc license or equivalent) and thirdly those identified as institutional resources (these



include resources developed internally such as study skills resources, but also any commercial resources we may have purchased centrally). (Figure 1.)

By using these together to “resource” the curriculum we aim to improve the “student experience” through designing learning experiences that broaden and deepen learning.

The concept of OER was not new to staff generally as the Unicycle project had engaged all Faculties in staff development activities and was a learning & teaching priority in the 09/10 academic year and so was widely discussed and established. It was also during this period that we were able to establish staff “buy in” of OER and polled over 100 staff during a series of staff development workshops who wholeheartedly saw value in using OER. (figure 2)

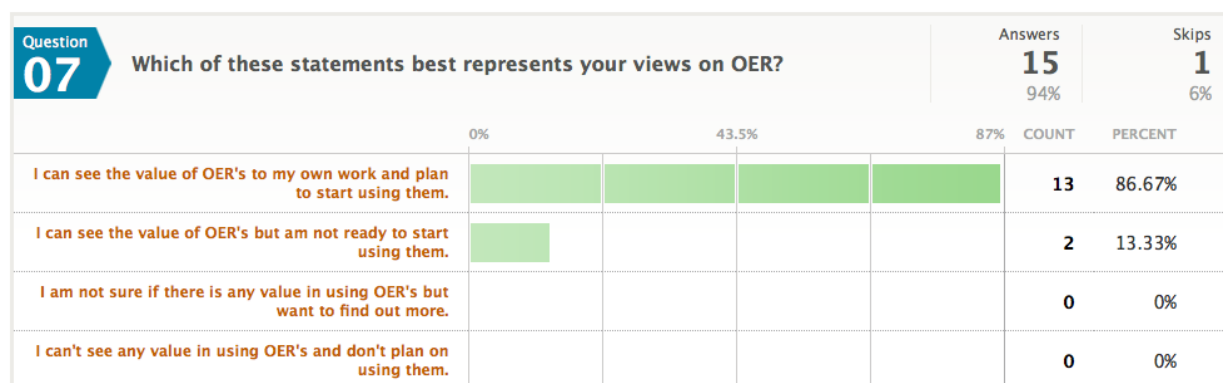


Figure 9

### Collaboration & Cross Institution Engagement

What we had learnt from the Unicycle project was that as an institution we were able to work towards an agreed single objective, whilst maintaining individual approaches that were often favored by Faculties & services areas. This engagement model relies on a central “guidance” team who then cascades to Faculties & services.

The JISC OER Infokit (2010) identifies that “most [projects] acknowledged the importance of giving content creators/producers a lead role with guidance, training and support from others with more technical or legal knowledge or experience” and one of the key factors to ensuring successful engagement is that in both the Unicycle project and within the Undergraduate Refocus the utilisation of already established staff groups and Faculty “movers & shakers” is paramount. Two roles that are of particular importance are those of Learning Technologist and Academic Librarian.

The Academic Librarians (employed & managed by the Library & Learning Innovation (LLI) service) built long established relationships with subject groups over a number of years with a remit to support courses in providing appropriate library resources available through the Library Online subject pages.

The Learning Technologists (predominantly employed & managed by Faculties) too have spent a number of years establishing themselves as Faculty members who are able to support staff in enhancing learning through technology, rarely had they worked in partnership or with the same goal. Both roles had been engaged in the OER project so there was already a shared interest. Using these two roles has proven to be an effective route to engaging staff alongside providing a strategic approach to curriculum resourcing.

The Academic Librarian is guided and supported by LLI whose role is to provide a range of resource materials through the subject pages and by being part of course development teams and reviewers of course documentation. The Learning Technologist is guided centrally from the Centre for Learning & Teaching (CLT) with a role to engage staff in the process of identifying resources and materials that are likely to be technology based. In both instances these roles recommend OER materials for course teams and help them to integrate them into classroom activities and into the virtual learning environment (VLE), as illustrated in Figure 3.

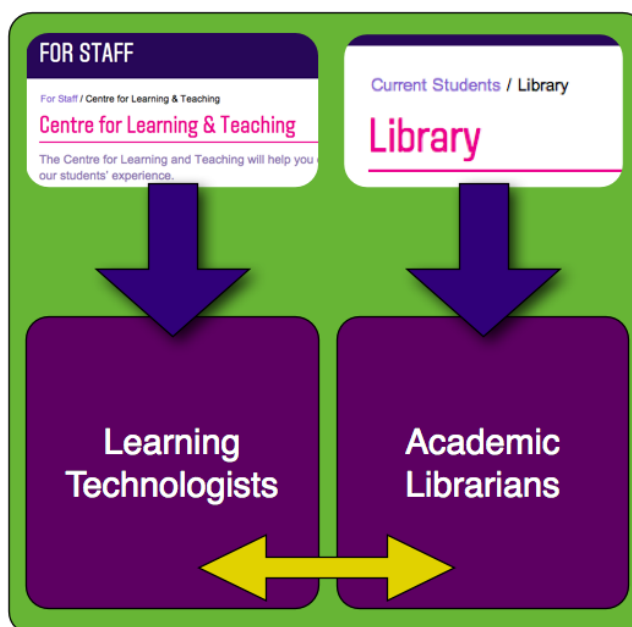


Figure 10

### Where are we now?

All courses in the refocus are in the process of being reviewed prior to a stage 2 development period. Learning Technologists and Academic Librarians are all providing review comments on the course & module documents. This process will give them a rich picture of the course designs and module content.

They have already been working with course development teams (CDT's) to begin the process of identifying resources available for curriculum delivery. Some OER workshops for courses have already been undertaken, with a further series of workshops planned for April – July.

The new course structures will be starting in September 2012 (Level 4 only) and all resourcing of the curriculum will be completed in readiness for the semester one delivery with a goal that every course is using OER as part of their curriculum delivery.

### Conclusion

Open Education has taken Leeds Metropolitan on an insightful journey. From being producers and sharers of our own material we now move very much to becoming a user of OER.

As with all such journeys we are constantly learning, but also sharing that experience with others.

What we have been able to demonstrate is a commitment and belief in using OER to improve the quality of our students learning and the working practices of our staff. Beyond the Unicyle

project we have sustained OER engagement through cultural change, not large scale funding. As outlined by Wiley (2006), “OER sustainability in Universities will be achieved by making OERs part of the everyday fabric of the University’s functions” and We have set out to make open education part of the fabric of “our” institution – we are not fully there yet, but placing OER at the heart of curriculum resourcing is a step in the right direction.

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## **OERs in HE in FE: Creativity for Edupunks?**

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“Creativity for Edupunks” (C4E) is an OER that was created as a result of the authors’ involvement in C-SAP’s Open Educational Resources Phase II project: Cascading Social Science Open Educational Resources. The project investigated the dissemination of OERs from a critical social sciences perspective and involved four UK institutions. C4E was subsequently put forward as an appropriate resource for introducing OERs to lecturers working at Higher Education in Further Education (HE in FE) institutions.

In September 2011 the resource was awarded staff development status at the University Centre at Blackburn College and can now be seen as a course of study requiring thirty-three hours of online activity. The classification enables participants to claim this time as remission from their annual teaching hours and almost a fifth of full-time UCBC lecturers have volunteered to take the course. The staff development opportunities at HE in FE institutions have long been identified as a concern and C4E therefore attempts to address this issue by providing a more appropriate form of development.

The resource has eight separate topics that seek to enhance OER awareness and encourage involvement in their cycles of use and re-use. The participants with teaching remission are obliged to become OER producers by the end of the academic year and deposit their own OER into jorum. The continuation of the reflexive methods stimulated by the cascade research is one of the resource’s intentions and it therefore equally prioritises the open questions of ‘why’ and ‘how’.

The open movement has enabled HE in FE staff to develop the edupunk approach from its original anti-corporate stance into a more relevant proposition for their teaching responsibilities. The paper will explain how a pedagogical belief in ‘anarchogogy’ came to be considered as a suitable method for teaching and learning in HE in FE in the open age. The use of OERs from an edupunk perspective has empowered learners in these institutions ‘to get out and do it’ and therefore could be capable of creating a clearer sense of identity for a frequently misunderstood branch of higher education.

### **Keywords**

HE in FE; OERs; staff development; edupunk; OEP.

### **Introduction**

This paper discusses issues which were involved in the production of "Creativity for Edupunks" (C4E), a wiki-based resource aimed at Higher Education in Further Education (HE in FE) staff that covers issues related to identifying, locating, releasing and putting OERs into curriculum. The resource was produced due to the authors’ involvement with C-SAP’s Open Educational Resources Phase II project: Cascading Social Science Open Educational Resources. This participation introduced the authors into a world of open education that previously had barely registered on their horizons. The initial project meetings required an unfamiliar type of work that felt totally distinct from the standard HE in FE lecturing role where course management skills can be the main priority.

The power of reflecting on open approaches and technology’s increasing ability to enable collaborative experiences brought a realisation that edupunk approaches could have some relevance to enhancing learning in this branch of higher education. The paper will therefore

explore the edupunk concept, its potential meaning for HE in FE and the educational benefits it could provide.

### **The background to the resource**

The resource is intended to be primarily used by people working in HE in FE institutions where more than one in ten undergraduate students are now taught (NUS Connect, 2009). The number is likely to rise as a result of the government's desire for 'bringing choice, encouraging competition and opening the market up to new providers' (Department of Business Innovation and Skills, 2011a). It is therefore expected that FE institutions and the private sector will increase their involvement and take advantage of the lifting of the restrictions on their current numbers of enrolled students (Department for Business Innovation and Skills, 2011b: para. 4.16). The proposals to expand HE in FE did not consider advancing the lecturing role at these institutions and disregarded concerns raised almost a decade ago by the HEA. The obstacles faced by lecturers were reported as: high teaching workloads, limited library resources, a lack of a HE culture, the need for more scholarly activity and a lack of development opportunities (HEA, n.d.). These issues may not be unique to this branch of the sector but their distinctive combination illustrates the extent of the potential difficulties.

The staff development prospects at HE in FE institutions can provide a striking example of lecturer dislocation as despite exclusively teaching HE, tutors can be regularly required to undergo sessions featuring mandatory FE requirements such as OFSTED, child protection and membership of the Institute for Learning. The frustration with these missed opportunities is compounded by the recognised importance of these spaces:

"Time to release staff for development is clearly the greatest support need expressed by the colleges. Beyond the core requirement for staff development time, there is a further need for staff time in curriculum planning and development, teaching and assessment, research and reading, industrial updating and secondments, and collaborative activity with other institutions." (HEFCE, 2001:11)

An effect of the cascade project was a belief that an open approach to staff development could assist with overcoming these problems and those noted by the HEA. The accessibility of the OER community facilitates collaborative experiences previously beyond the reach of HE in FE tutors whose small numbers exacerbates their isolation. The lack of connection with other colleagues can now be overcome via accessible resources such as open webinars where experiences can be shared between tutors who feel the HE requirements of their role can be seen 'as a problem' for their institution (JISC, 2011). The cascade research also revealed the communicative benefits from open dialogue that extends beyond equivalent institutions:

"Thus through participation in the cascade project, the UCBC partners were able to have some of their assumptions challenged, such as the belief that the low level of digital literacy of their students was unique to their institutional context. Therefore, the C-SAP cascade project strove to focus more on the strengths of HE in FE sector, such as an emphasis on teaching and student satisfaction as well as high level of pastoral support for students, and potential synergies with the HE sector rather than view these sectors as diametrically opposite." (HEA/JISC, 2011: 27-8)

### **The edupunk concept**

The sharing of an article amongst the cascade partners entitled "*Nevermind the pedagogues, here's edupunk*" had immediate attraction with the UCBC partners, not merely because of the highly evocative title but also because of its claim to represent:

“a new instructional style that is defiantly student-centered, resourceful, teacher - or community-created rather than corporate-sourced, and underwritten by a progressive political stance.” (Cohen, 2008)

The term had been used a month earlier in a blog by Jim Groom, an instructional-technology specialist and adjunct professor at the University of Mary Washington. It arose out of a self-confessed rant at the commercial activities from corporations such as Blackboard. The concept was reported by one of the original theorists behind the connectivist approach to learning, to have “totally caught wind, spreading through the blogosphere like wildfire” (Downes, 2008). It was though quickly criticised for lacking clarity and for being too closely aligned to the model of punk said to have been conveyed by the ‘Sex Pistols’ in the 1970s. However, the term has maintained interest and published books now accompany the array of blogs that have detailed on both its death and growing popularity (Kamenetz, 2010 and 2011; Cain, 2008; Churchill, 2011).

The proximity between the musical and educational interpretations of ‘punk’ might be too close for some, but according to Jon Savage’s *England’s Dreaming*, a comprehensive review of punk music in the UK in the 1970s, the manner in which it overcome obstacles from the music industry, media, politicians and general public provides a rich source of reflection for potential edupunks:

“[It] resulted in an underground distribution and production network which turned necessity into a virtue: it was easy and cheap, go and do it. These ideals of access – which have been expanded by the internet – have become one of Punk’s enduring legacies.” (Savage, 2001: p. xv)

The cascade research corresponded with the widespread discontent at the increases in tuition fees and therefore edupunk reflections appeared to be an appropriate inquiry. The resource seeks to guide its users to consider whether online habits can do to higher education what they have done to other information industries such as publishing, news and music. It encourages exploration of the open opportunities now provided by situations such as “*Going to Harvard from your own bedroom*” (BBC News, 2011); and “*Is it possible for everybody to be an autodidact, now that knowledge is so accessible online?*” (Wall Street Journal, 2010). The DiY approach to learning is a core feature of edupunk and this enables autodidactic teaching methods that pre-date popular culture by an appreciable length of time to be reconsidered. An example of the benefits of this approach can be found in the eighteenth century teaching career of Joseph Jacotot in Jacques Rancière's book, *The Ignorant Schoolmaster: Five Lessons in Intellectual Emancipation* (1981). There it is explained how the approach led to Jacotot’s students producing more than what was customarily achieved as his students provided “sentences of writers not of schoolchildren” (p.4). The realisation that this complete text was freely available as an OER, plus equally provocative works from writers such as Ivan Illich and Paulo Freire encouraged the belief in the possibility of edupunk approaches. The opportunities for such reflection are rare for lecturers working in HE in FE institutions where such resources may not be available and staff development is limited by the FE location.

### **An edupunk playlist**

Although C4E is an OER and can therefore be used in anyway subject to the terms of its attribution- noncommercial-share alike, Creative Commons licence; its use as a course about OERs commenced in September 2011 with a cohort of twenty-four participants, nineteen of which were employed as full-time lecturers at UCBC. Employment status had to be recorded due to these tutors’ receipt of an hour per week teaching remission for engaging with the resource. It can therefore be seen as a course requiring thirty-three hours’ online study that is guided by the eleven sections of its wiki. A list of suggested dates for progressing through the

content is posted to encourage communication between participants but is not mandatory. This construction allows users to select their preferred direction and levels of granularity from eight highlighted features of the OER cycle of use and reuse. The different topics each include reflective questions and the final three sections of the resource are spaces where experiences of producing and disposing OERs can be shared.

The first topic seeks to assess the view that OERs can be seen as ‘the new university’ thanks to the sheer number of available resources and support from the Creative Commons licensing system. This choice was influenced by the cascade methodology that included attendance at the OER 2011 conference where such a question was presented in the opening keynote (Hall, 2011). The resource’s second and third sections debate whether OERs can transcend financial and licensing justifications to also provide more effective learning experiences. It therefore guides participants towards OERs that reflect on radical pedagogy via complete editions of texts such as Ivan Illich’s *Deschooling Society* and Paulo Freire’s *Pedagogy of the Oppressed*. The former’s use as a discrete course from the peer to peer university in 2011 enhanced these reflections; particularly as this educational place is reported to have acquired more than 20,000 students since its establishment in 2009 (P2PU, 2011). The next topic enquires further into the learning experience by considering the possibility of improved methods of assessment from adopting open approaches.

The resource then progresses onto reflections concerning the digital abilities and expectations from contemporary students. This section therefore utilises OERs that investigate conceptions such as ‘digital natives/immigrants’ or ‘residents/visitors’ (Prensky, 2001; Whyte and Le Cornu, 2011). This is followed by an inquiry into the potential from using open means of communication for shaping learning and participants are guided towards tools such as voicethread and prezi. The penultimate topic considers the use of digital images in contemporary undergraduate teaching before ‘anarchogogy’ is put forward as a desirable approach for maximising OERs’ potential in HE in FE. The final three sections of the wiki are reserved for the participants’ production of their own OERs and the subsequent deposit into jorum. These are communicative spaces intended to help with this process and it is anticipated that the generated feedback will, amongst other things, establish whether this is an appropriate allocation of time.

### **Everything starts with an E (learning)?**

The cascade research identified lecturers’ lack of time as a major obstacle for engaging with OERs and the challenge of competing for space in lecturers’ crowded worlds, digital or otherwise, dominated the resource’s planning. The project considered the importance of localisation for OERs and thanks to the edupunk reflections this took the form of building on expressions of local popular culture:

“The north-west of Britain is better known for its urban wastelands and decaying industries than its nightlife, but between 1989 and 1991...the otherwise unremarkable town of Blackburn became the centre of a DiY party movement...Barriers between races and classes were broken down, a generation of football hooligans tuned in and chilled out, and the inner-city underclasses broke out of the ghettos and discovered a new world of potential and release. At the vortex of the storm was Blackburn (and in particular the underground party collective Hardcore Uproar).” (Hemment, 1998: 209-10)

The collective primarily consisted of local people who independently repurposed both land and music to create weekly warehouse parties that were attended by thousands of people; tens of thousands if the reports in the local press were accepted. The events were initially tolerated by the police but a change in approach led to their demise and Hardcore Uproar’s ‘Boomtown’ epithet gradually lost its meaning. In 2003, a short film directed by Piers

Sanderson entitled ‘Acid House in the Disused Mills of Thatcher’s Britain’, illustrated the plethora of rundown and empty warehouses in Blackburn during these years; places that had previously been extremely profitable for an elite group of people. Their questionable business methods and exploitation of vulnerable workers clearly marred this ‘success’ but such stains were not as obvious to their reuse as commercial benefits did not appear to be an overriding priority. The free or low cost entry charges contrasted starkly with those at the more well-known licensed events and nightclubs such as those popularised in the Michael Winterbottom (2002) film ‘24 Hour Party People’.

The music at the Blackburn parties demonstrated their OER characteristics as remixing, then known as ‘UK sampledelia’ was much in evidence (Hemment, 1998: 214). The use of technology for repurposing data also enabled widespread ‘building on the work of others’ to take place (Laurillard, 2011). The process was exemplified by Hardcore Uproar’s reuse of Obi Wan Kenobi’s retort to Darth Vader in the original *Star Wars* film of “*strike me down and I shall become more powerful than you can possibly imagine*”. The sample featured prominently in a recording, also called ‘Hardcore Uproar’, which in 1990 was in the UK’s top forty music chart for two months reaching a highest position of twelve. The tune was subsequently reused by television producers where it became regular accompanying music for BBC1 sports programmes. A full length film commemorating the Blackburn experiences was released in 2010 but it has been reported that its general distribution has been delayed until clearance, costing £30,000, is acquired for the music rights (highonhope.com). The film has though been shown at some European venues and critical acclaim followed its display at the Kaunas Film Festival 2011:

“The first film is a delightful surprise. *High On Hope*, a first feature from Piers Sanderson, was made on no money, just favours, enthusiasm and sheer invention, developed and augmented from a short made in 2003 about the birth of the Acid House scene in the north of England. Blackburn, of all unlikely places, was the spawning ground. Though perhaps not so unlikely, as the film shows how in reality this music development so often seen as mostly hedonistic was actually highly political in the real sense. In the gloom of Thatcher’s Britain, the structures (disused mills and factories) that had first been places of hard labour for the working classes, then decaying blights on their landscapes, were reclaimed as places of uncommercial joy and self-expression.” (Seacroft, 2011).

The proximity between OERs and popular music and culture is enhanced by the use of terminology such as ‘mash up’ (Pegler, 2011) and the examples from punk and acid house illustrate what can be achieved from DiY approaches. The cascade methodology enabled a belief in the potential for similar powers of invention for OERs in HE in FE and its adoption of OEP (open educational practices) as reported by the OER Impact Study (Masterman and Wild, 2011).

### **“The importance of ‘E’ as well as ‘O’ in OER”**

The significance of ‘e’ in OERs was also highlighted by the summary of the Impact Study’s findings that stated educational value to be a greater influence on use than even accessibility (White and Manton, 2011: 8). C4E seeks to assist with both facets of openness and as well as hosting pedagogical debate it could be used as a signposting service towards trusted OERs. These additional resources should be welcomed at HE in FE institutions where the issue has been identified by the National Student Survey as the main difference in satisfaction rates between students in the different parts of the sector (NUS Connect, 2009). The reported impact of OERs would suggest the benefits to HE in FE institutions from having openly engaged staff:



“The resources that their home institution owns or subscribes to no longer have to be the primary source of information for staff or students.” (White and Manton, 2011: 4)

A lack of resources had a major influence on the pedagogical approach of C4E as a lack of subscription to Blackboard and other corporate behemoths limited the resonance of the edupunk catalyst. The exclusion forced alternative thinking and the empowerment from the cascade’s reflection plus the recognition of technology’s ability to forge communities of practice, defined as ‘a self-governed learning partnership’ (Wenger, 2011) enabled the creation of an approach that is more relevant to HE in FE institutions.

### **The Emergence of Anarchogogy**

As has been suggested and outlined above, as part of the development of the *open* strategy of the C4E framework, several areas needed to be considered, confronted and tackled both conceptually and practically. This was necessary in order to navigate and traverse certain institutional or sector-related obstacles). One issue in particular – to be focused upon in this section – was the recognition of an *unarticulated* and problematic space, located *somewhere* in-between the conceptual opposites of pedagogical didacticism, characterized by a centralised and corporate control of knowledge (Hudson & Meyer, 2011); and, as has been suggested and briefly explored above, Edupunk, associated with the proliferation of DIY-education and the autopoiesis (Mingers, 1995: 11; Maturana & Varela, 1980) of learning and resultant knowledge. Our attempts to confront, break-free from, and creatively move beyond certain traditional pedagogical and bureaucratic rigidities – that by the default of our institutional context and heritage, unavoidably underpin our fledgling HE environment. We realised that maybe the Edupunk approach didn’t necessarily hold all of the appropriate answers.

As an initial response to our discovery and engagement with Edupunk, as HE in FE educational practitioners, we felt that the ethos of this initiative, with its aspirations towards liberated knowledge and ‘free’ learning, contained significant potential, certainly where the perceived possibility of an initial, and formative, alternative pedagogical framework was concerned. But, as an ethos, and, an approach (in a *pure* sense), didn’t necessarily contain the radical and productive alternative that we were seeking. Our realization of this came from the following initial ‘cascade’ attempt with students.

Having become quite excited at the creative possibilities posed by the DIY ethos and *anarchistic* framework of Edupunk – and, as part of our C-SAP remit to look at bespoke strategies with a view to cascading OER's to both educational practitioners and learners – we established two-student focus (or, working groups) and, invited them as part of an Edupunk-influenced activity to engage with various OER repositories and collaboratory materials; we invited the groups to consider how OER's and their potential might enhance their learning, collaboration and research experience. Our assumption was that the same (or at least similar) *hysterical epiphanies* and realisations of potential empowerment would emerge and be reflected back to us from the groups. However, the actual responses were thoroughly disappointing; there was very little – if any – engagement with the OER sources and their associated materials. The respondents clearly expressed a need to understand a context and rationale for incorporating any such materials or activities into their existing programmes – with a particular emphasis on assessment and weighting (i.e. “*how much would this contribute towards my grades?*”) The autopoiesis of serendipitous connections and DIY learning – as stipulated by the Edupunk approach – just didn’t burst forth into an explosive genesis. As we became more familiar with the ‘reflexive’ methodology of the cascade project, our intention was to avoid a straight-forward *embedding* of OER's as minor technological appendages, aimed at discreetly enhancing the cyclical rolling-out of an established and repetitive curricular framework. Where learners and collaborators are concerned, we wanted

to avoid any subsequent strategies to embed OER's as superficial enhancements aimed at maybe increasing the likelihood of student interaction, collaboration and wider research. Our ambition was to, in some way, formulate an alternative approach to the inherited and underlying pedagogical principles, and so, conceive of a more open and creative 'pedagogical' approach.

This then prompted us to consider an alternative (what might be termed a '3<sup>rd</sup>') position in comparison to those previously identified as didacticism *or* Edupunk. As part of the conception and construction of the C4E programme, we took on board these initial disappointing findings – with a view to effectively navigating and transgressing them – and grounded the construction of C4E in our alternative *pedagogic* notion of anarchogogy.

### **Anarchogogy**

The first part of the term anarchogogy (that of 'anarcho') is extracted from – and has obvious associations with – the political theory of anarchism, this being a derivative of the Greek notion of *anarchos*, which means “without rulers”. The second aspect of the neologism 'agogy', also has its origin in Greek and is associated with the term *agogos*, meaning “to lead”. Interestingly, and, pertinently, *agogos* (agogy) is also a constitutive element of term 'pedagogy', which means literally “to lead the child”. Anarchogogy was thus coined and developed as a *third* and alternative approach to cascading and utilising OER's, geared towards unfolding a process of author-dispersal; the identification of a liberating *arena* (virtual or otherwise), where mutual exchange generates an openness and the negotiation of temporally experiential invitations (ignited by an initial 'guide' or guidance) to initially lead – or, more appropriately 'guide' – collaborators towards newly conceived curricular possibilities (across various disciplines).

From the chaotic scattering of this potentiality, latent increments of ideas and journeys – in pursuit of new ideas – are provided with space to germinate. Anarchogogy thus presents the idea, and, possibility of an open-ended approach to the dissemination of “new” formative notions of academic structure, engagement and critical proposals. Anarchogogues, negotiating beyond the *legalities* and literalities of pre-existing institutional traditions and bureaucratic constraints are therefore guided towards a nomadic territory where they can begin to creatively reach futurewards. Anarchogogy is thus posed as an embryonic development, rich in potential, where the further progression of the principles and strategies associated with the cascade of OER's and C4E in the HE in FE context is concerned.

### **Conclusion**

The increased reflexivity that has been derived from the cascade research has enabled the possibility of change to feel like an achievable goal. The use of OERs has opened up avenues of pedagogical inquiry that were previously inaccessible and provided much needed resources for HE in FE institutions. The cascade has also had effects beyond this issue and has enabled a degree of independence to be given for staff development and this change attests to the power of openness and the 'can do' attitude of edupunk. Open educational practices have provided this branch of higher education with unprecedented opportunities to display its worth. The challenge for the resource itself is to sustain participants' levels of interest and through its collaborative approach, remain a credible alternative for doing things differently.

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## Open Educational Resources for Researcher Development

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### Abstract

This workshop explores two approaches to using OERs for researcher development: creating and releasing resources and finding, evaluating and reusing OERs. Methods@Manchester uses existing expertise in teaching social science methodologies to doctoral students to build a community of practice. The key issues in this approach are making resources available to researchers when they need them and in a form that is easily accessible; and enabling researchers to locate the appropriate resources for their needs. Methods@manchester resources are available from an open website. Videos and podcasts are also available on YouTube and iTunes. has are: The resources were designed for use by University of Manchester staff and students, but releasing them as OER's raises questions about intellectual property and the use of Creative Commons licences.

In contrast Skills Portal (University of Surrey) is a classified collection of OERs, repurposed to meet local needs. The majority of resources came from Jorum. The intention is to give students additional on-line materials to supplement workshops. Resources are relatively substantial sites with navigation not just simple web pages or handouts. Finding and evaluating resources is a key element of this approach. A degree of technical expertise is required to repurpose, particularly as these materials were originally created using a range of technologies.

The Researcher Development Framework (RDF) specifies a range of transferrable skills and attributes that doctoral students should develop alongside their research project. Skills Portal materials are mapped to the RDF. RDF was also used to inform the initial search requirements for resources. Methods@manchester resources are not currently mapped onto the RDF, but this is being considered as a way of classifying the resources to enable researchers to identify them more easily.

### Keywords

Research Methods, Transferrable Skills, Researcher Development Framework.

Following the Roberts Review "Set for Success" (2002), considerable effort and resources have been applied to the development of the transferrable skills employers expect from researchers. A body of evidence exists on the effective delivery of research training to postgraduate students (Winn, 1995; Chapdelaine & Chapman, 1999; Dunn, 2000; Lipsitz, 2000; Eamon, 2001). Generic compulsory courses designed to develop transferrable skills and research methods are often unpopular as doctoral students fail to perceive their importance. At the same time there is consensus that students enter higher education unprepared and need help building critical research skills (Brown et al. 2007). Many institutions acknowledge that students find courses in research methods difficult and challenging (Edwards and Thatcher 2004). Quite often, students undertaking research methods courses have difficulty making the perceptual link between learning research methods as a stand-alone subject and applying this knowledge and understanding to their own research (Benson and Blackman 2003).

## **Researcher Development Framework (RDF).**

Envisaging a career development pathway beginning with doctoral students, moving through early career researchers, to lecturers, senior research fellows and Professors, Vitae's Researcher Development Framework (RDF) <http://www.vitae.ac.uk/researchers/429351/Introducing-the-Researcher-Development-Framework.html> identifies a range of attributes and skills that researchers should develop alongside their academic research. The RDF categorises skills into four domains:

- A. Knowledge and intellectual abilities
- B. Personal effectiveness
- C. Research governance and organization
- D. Engagement, influence and impact.

Each domain is subdivided into three specific attributes into which the general skills are grouped. RCUK Doctoral Training Centres and most institutions provide training programmes and workshops mapped to the RDF which assist particularly, though not exclusively, their doctoral students and ECRs in developing these skills. Vitae itself provides a forum for ongoing development of the RDF and some training opportunities.

In order to engage with an often disparate community of researchers, many institutions have begun to develop online resources for the training of staff at all levels, either as something which can be used within/alongside workshops or as an alternative to workshops, for example "Skills Portal" at University of Surrey or methods@manchester an initiative at the University of Manchester which aims to draw upon the university's existing strength and expertise in research methods in the social sciences to create a 'community of practice' that can enhance research methods training for staff and postgraduates and promote interdisciplinary and innovative methodological developments. We will present and contrast two different approaches to OER; reusing existing materials (Surrey) and releasing resources (Manchester).

## **Repurposing existing resources**

The Surrey Researcher Development Programme maps to the RDF offering a programme of elective workshops plus three compulsory sessions. A classified collection of OER materials "Skills Portal" <http://libweb.surrey.ac.uk/library/skills/learningskills.html> has been created to give opportunities for self-directed study to distance learners and those unable to attend face to face workshops. Resources, largely collected from Jorum <http://www.jorum.ac.uk/>, are repurposed for use at Surrey and mounted on a simple web server. Usage data (Google Analytics) shows that these materials are being used and that use is increasing.

Skills Portal continues to develop as more resources are identified. The process of finding, evaluating and classifying resources requires pedagogical understanding of the overarching aims of the RDF. Technical skills (html/javascript/css) are required to modify and customise resources for delivery via a web server. Many resources come from the Open University and need an index creating as we do not have access to a SCORM player. Others come from the WOeRK project (Plymouth) <http://cpdoer.net/>. The intention is to give users a relatively substantial resource to work through rather than handouts or documents. Most include interactions where users are given tasks as an opportunity of reflecting on their experience.

The advantage to students of Skills Portal is that resources have been selected to meet their needs in terms of content, level, interaction, and presentation that are ready to use.

## **Creating and releasing new resources**

The methods@manchester approach is based on the premises that both methods and skills training are delivered more successfully if they are needs-driven and flexible so that they can



be accessed by researchers when they are required and perceived to be useful. This requires the development of intelligent ways to get information to the researcher at the right time. A key challenge is how to meet the diversity of learners' needs with limited resources without diminishing the quality of learning (Lie and Kano 2001). There is a clear need for academic practitioners to be able to access good quality, peer-reviewed resources for teaching both transferable skills and research methods. We argue that Open Educational Resources could help to provide students with resources targeted at their level and fill in any potential gaps within the curriculum. Work conducted already has revealed, however that the provision of open research methods resources is rather inconsistent, with little attention being paid to issues of discovery and evaluation. It is also clear that there is some ambivalence about open-access material, particularly around flagging the quality of resources, especially for PGR's/new researchers. The methods@manchester 'brand' acts to some degree, as a guarantor of quality. Methods@manchester currently makes most of the resources it produces openly available through you tube videos and in the form of unrestricted material on the website: <http://www.methods.manchester.ac.uk/> The centre recognizes that Google and you tube are widely used by Post-Graduate Researchers (PGR's) and so resources need to be easy to find using these tools.

The rationale for this session stems from the recognition that a wide range of OER materials are available to support researcher development but academics and students often have problems locating and accessing good quality, resources appropriate for their particular needs. Searching on the web, or even using large repositories like JORUM, and evaluating the resources is potentially very time consuming. Our session will demonstrate that developing online resources to provide researcher training does not need to be labour or time intensive: there are OER materials out there which academics and researcher developers can adopt and amend to suit their needs. We argue that one way to identify and organize appropriate resources is by drawing upon the researcher development framework. These examples show that OER's can contribute to the flexibility and accessibility of research training resources and so encourage postgraduate engagement with them. Furthermore, OER's can be mapped on to the researcher development framework in order to help researchers identify their own development needs and access appropriate resources to address them.

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# **Open educational resources: opportunities and challenges in the tertiary education sector – Case Study- Mauritius**

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## **Abstract**

With a view of promoting literacy in the world, open educational resources have been growing rapidly since 2001. In Mauritius the policy of the Government to promote the island as a cyber island has resulted in a number of incentives given to the public at large to increase the level of literacy in the field of information technology. This at the same time resulted in the promotion of the use of open educational resources in various levels of education, from primary up to tertiary. At tertiary level the use of open educational resources in the field of pedagogy, instructional design, environment, science, social science and engineering are being used to a large extent. In this paper the use of OERs in the field of environmental science and engineering is being discussed. Quite a vast amount of information is available on the web on the following topics: environmental management, geographical information systems, computer aided design, geology, wastewater engineering, water resources and groundwater modelling. Use of these very valuable resources are often constrained with regards to copyright issues and with regards to having to adapt them to the local situation. OERs in the field of engineering can be so structured that readers get a good understanding that off shelf technologies have their limitations from country to country.

## **Keywords**

Education, OERs, Engineering, situated learning.

## **Introduction**

Open Education Resources (OERs) have been defined by UNESCO and the Commonwealth of Learning (COL) as teaching, learning or research materials that are in the public domain and that are released with an open licence (such as Creative Commons). The open license conditions allow communities of practitioners and stakeholders to copy, adapt and share their resources legally and freely, in order to support high-quality and locally relevant teaching and learning. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials or techniques used to support access to knowledge. The OER movement has contributed significantly to the vast amount of technical information available in the field of science and engineering (Wikieducator, 2012). There have been several factors which have contributed towards promoting and popularising OERs, namely cost, accessibility, consumer/producer relationship and licence (Wikiuniversity, 2011).

## **OER & Engineering**

In engineering, most of the subjects offered fall under the category of problem based learning. Subjects such as environment and engineering tend to be structured as 25% general information and 75% case studies in the local context so that students are able to appreciate the application aspects of the subjects. OERs in the field of engineering are available from a large number of sources, and to name a few; the Massachusetts Institute of Technology (MIT, Opencourseware), the UK Centre for Education in the Built Environment (Orbee, Open Resources) and Merlot Engineering. In addition there are web sites such as JISC, Iberry, Delores, OER and the Open Educational Resources List (Manchester) which have compiled information of relevant sites which provide educational materials in the field of engineering. These web sites provide both tutors and students with valuable information in order to either conduct their course, to benchmark their teaching and learning with what is being practiced

in other countries and to keep up to date with latest developments in the specific field. Engineering is also about finding solutions to local problems and local conditions differ from country to country. The web site such as OER Africa, has compiled interesting information about educational projects undertaken in Africa. Off shelf technologies may not adapt to local conditions. This is where there is a need to adapt the educational course materials to cater for the demands in the local environment, and this has to take into consideration the creative commons copyright regulations.

### **OERs & Engineering - A case study**

Students following the module Water Resources were requested to solve a real case problem using facilities available in the laboratory. They had to collect information from the internet about the engineering aspect of the problem they had to solve and find solutions which would be acceptable in the local context. These days all engineering problems and solutions are also associated with environmental concerns. The students had to emphasise on how these education materials helped them to get started with solving the problem and how to formulate the solution to the problem. The students also had to stress on the limitation of the education materials and at the same time stress on how they came up with the solution for the local problem.

Watershed basin management (catchment hydrology) is a well known topic under the subject hydrology. Educational materials were compiled about the various methodologies behind the study of catchment hydrology. The assignment consisted of simulating as a physical model the impacts of overpumping on coastal aquifers. In Mauritius the aquifers are all in dynamic hydraulic contact with the sea. Pumping inland close to the coast impacts on the ingress of seawater intrusion in the aquifers. The objective was to define the maximum safe pumping rate that could be permitted in such cases.

### **OER & Engineering – Critical assessment**

Valuable education materials are available as open educational resources, both for the tutor and for the students. These were used to get a sound understand about catchment hydrology and sea water intrusion, the theoretical aspects. The local situational aspects were based on prevailing local conditions, the characteristics of the geological basaltic formations, the pumping rate at boreholes near the coast, the rainfall distribution within the recharge zone and the prevailing legislation regulating exploitation of groundwater. The strengths in OERs are mostly the large volume of educational resources available on a topic, the ease of access to these information, and the possibility of benchmarking the learning process on an international level. The weaknesses are in fact opportunities that should be looked into. These are mostly about the situated learning process. Each country has something special to offer with regards to the application of the theoretical part of the learning process. There should be more opportunities for sharing in the form of case studies. The application of a subject is likely to differ from one place to another, and appropriate forums will build up a pool of case studies. In this way, those who have joined the open educational resources movement will be sharing the benefits of the learning process from those who have been using their resources to build on their learning process.

### **Barriers to promoting OERs**

A number of barriers have been encountered while using OERs. The level of information technology and communication varies and it was not easy to make use of those information which required better internet connections. An important point noted is that though the users do acknowledge the work of producers of OERs, there is presently not enough forum which can be used to inform producers of OERs about how their contribution is being appreciated. A forum could be set up to enable consumers of OERs to send a copy of the educational materials which have been adapted from existing OERs, so that the producers receive due

recognition for their effort. Also, many people working in the field of engineering or academic involved in engineering are yet not fully aware of these useful information, and they end up recreating the same educational materials. As a concluding remark, the study noted that there is a need for forums where case studies from various countries could be posted, so that everybody benefits, both the producers and the consumers of OERs.

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### **License and Citation**

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# Open Educational Social Media Content Groups and Networks within the Arts, Design & Media Education.

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## Abstract

This paper presents two case study perspectives of the role of open technologies in encouraging sharing and reuse of open content from SCORE fellows Sarah Atkinson and Chris Follows.

Virtual Learning Environments (VLEs) and Institutional repositories are rarely built to support social media content communities, as a result many learning and teaching materials are being independently dispersed across the web using more familiar and everyday user friendly web 2.0 environments. Good quality learning material are being produced and shared either internally hidden away in VLEs or lost in locally shared group blogs, these resources often become dormant and lost as the onus is often placed on one person 'the teacher' to administer and develop this content alone, some content never leaves the classroom/studio. There is currently no middle ground within our institutional networks to facilitate the development of OER content communities. How can open educational social media content groups and networks support the process of cultural change and OER stewardship in new alternative open pedagogic practices for artists, teachers, students and practitioners?

The University of the Arts London (UAL) aims to develop a sustainable approach to open educational practice through the ongoing agile development of existing 'open educational social media content groups and networks'.

**Case study one process.arts:** This case study explores the creative and educational potential, challenges, limitations and benefits of use and reuse of open educational rich media content. The paper focuses on UAL's experience of developing <http://process.arts.ac.uk/> and its involvement and integration with the wider arts sector and the open movement through SCORE fellowship research, [ALTO & ALTO UK](#) (JISC UK OER programme) and the [DIAL](#) project (digital Integration into arts learning) part of the JISC UK Developing digital literacies programme.

**Case study two SP-ARK:** SP-ARK is an interactive online project based on the multi-media archive of filmmaker Sally Potter. The archive includes the intuitive visual navigation of films and all of their related assets. Users are able to view and annotate materials using the sites 'pathways' feature, other users are then able to access the annotated pathways, which lead to a deeper engagement with the materials. The case study seeks to draw out the benefits and efficiencies of collaborative resource generation, exploring the challenges of sustainability and expansion of both the resources and the encompassing user-group community.

## Keywords

collaboration, reuse, repurpose, open, resources, practice, OER, open educational resources, process arts, sharing, open educational resources, content communities, SCORE, process.arts, University of the arts London, University of Brighton, SP-ARK

1. **Case study one process.arts:**  
**Open educational social media content groups and networks at UAL**

Through SCORE, ALTO, ALTO UK and DIAL, UAL have begun to explore the pace of technological change and its impact on the day-to-day practices of staff and students at UAL and the wider sector. Maintaining progressive practice in these new digitally enhanced learning spaces can present new expectations, anxieties and challenges for all. The [ALTO eco system](#) OER environment for example consists of a basic repository ([ALTO file/content store](#)) and a dynamic agile Web 2.0 online studio space (<http://process.arts.ac.uk/>) which together provide UAL with a working OER infrastructure to support the development and practice of open education.

The problem of OER reuse remains consistently on the agenda for the movement as a whole. For some subjects the proliferation of open content resources in specific subject areas has made finding useful and quality content for use and reuse easier, although has also presented new challenges regarding search and find and surfacing content in the right places. New OER tools and websites are not enough to develop and sustain progressive open educational practice at UAL, cultural change and ongoing open educational ‘stewardship’ maybe a fundamental requirement.

### 1.1 FAST OER search and find

One of the key challenges for open practice and research for teachers and students is finding or being directed to the useful open content. Google searches will produce some relevant resources but there are more risks in terms of the quality of the content and the re-usability of the resource. Finding resources for use in art and design teaching is difficult, and even advanced searches in Google take time and may return little or no usable open content. The same search in centralised OER repositories would provide high quantity of appropriate results but within a very narrow ‘local’ field of view. There is a strong argument for a ‘national’ centralised subject specific OER repository; however in the current financial climate the long term sustainability of such a resource is questionable. A centralised service could also be seen as insufficiently addressing the needs of particular universities and subjects. Many courses within Universities wish to manage, develop and host their own bespoke OER environments as far as possible, in preference to going outside and submitting to national repositories.

### 1.2 <http://process.arts.ac.uk/> An OER social media content community website

**process.arts** has been built using an open sources drupal (<http://drupal.org/>) platform, the site provides a user-friendly interface, rich media tools for uploading and sharing user generated content, forums, groups and easy integration with other Web 2.0 environments. The site is an ongoing agile development project and provides an open online space for staff, students and the wider community to discuss and develop resources and open education. **process.arts** is an example of a subject specific agile web development platform for art and design OER. The platform relays fully on community participation to support and steer its development. **process.arts** was created at UAL in 2008 through a short 10 day secondment, the project has since continued to develop and integrate within UAL systems through mostly voluntary means. Although supported by UAL through small development incentives and free server space the project has never been officially classed a UAL service, although we are hopeful this will change in the future as the open educational movement becomes more established at UAL.

Art colleges like UAL may prefer to publish and manage their OER content in-house, **process.arts** is a working prototype example of this. The ALTO UK project team have been in discussions with two other arts institutions and they are potentially interested in installing their own local drupal **process.arts** installation, stripped out and designed and branded to fit into the institution. If more locally managed OER websites begin to be established there could be a need for new tools and standards for creating an ‘all-in-one’ OER single subject specific

search environments, which ‘plug’ into and cluster various stand alone subject specific OERs, websites and archives spread across many different locally managed platforms. A single search environment could enable users to search and find high quality OER content quickly and efficiently from a broad subject-related field. The OER content creators will be better able to surface their content locally and nationally within a focused federated environment with minimal effort.

### 1.3 The future

The overall concept of **process.arts** is to provide a locally managed hybrid social and educational media platform that integrates teaching and practice; we aim to develop an open online environment where people ‘want’ to be as apposed to ‘have’ to be. The motivations for wanting to be in this space are still being explored, its clear through our open practice focus groups and general research feedback at UAL that many staff and students are not familiar, clear or comfortable with the notion of ‘being open’ in their day-to-day practice, it remains a step to far for a vast majority of staff.

Developing new OER online communities and groups also raises many questions: what qualifies a community a group, how do we classify a community, groups or individuals, who are the core members and who are the periphery members? Are they communities or Individuals with a common interest, who come together around objects and ideas, common outlooks? UAL are currently exploring the development of the group dynamic, participation and measure of success.

### 1.4 How can we bring about changes in belief and attitude?

It’s important to understand existing cultures before introducing new cultures. It’s easy for educational developers or OER specialists to lose touch or truly understand the needs and practices of its stakeholders. The role of open technologies in encouraging sharing and reuse of open content can only become a reality if the open technologies are being developed with and for the stakeholders involved. There cannot be one OER fix for all.

### 1.6 Relationships between teaching and practice

To support our understanding of the meaning of ‘practice’ in the context of open educational practice and art and design, we can reference Shreeve’s (2008) five categories of practice:

**Category 1: *Dropping in.*** There is an asymmetrical relationship between practice and teaching with the focus on practice. Knowledge from practice is seen as being passed on to the student.

**Category 2: *Moving across.*** There is an asymmetrical relationship between practice and teaching with the focus on teaching. Knowledge from practice is used in teaching students.

**Category 3: *Two Camps.*** There is a symmetrical relationship between practice and teaching, but they are seen as two different and separate things and tension exists between them. Knowledge from practice is used in teaching students.

**Category 4: *Balancing.*** There is a symmetrical relationship between practice and teaching with a fluid exchange of knowledge between both.

**Category 5: *Integrating.*** There is a holistic relationship between practice and teaching. There is an elision between practice and teaching knowledge and they become one and the same thing.



### 1.7 Art practice and openness (the arts practitioner)

The examples below reflect a specific perspective of an arts practitioner although art, design and media subjects at UAL reflect a greater variety of subjects from fashion, design, media, theatre and performance; the core challenges of public facing practice are common to most. At UAL as with other art colleges tutors, academics and technicians are all Art and Design practitioners and specialists in their field of practice. They are familiar with notions of sharing their ideas and publishing, exhibiting, performing and showing their work and concepts in public. Exhibitions/shows/art events for example are often accompanied by educational/academic research insights or information about the work e.g. the artist talk, sketchbooks, studio video interviews, audio guides, handouts, websites and books etc.

### 1.8 The artist's studio

The dynamics of a shared artist studio environment complex are similar to that of a college environment, it provides a personal space to work and a communal space to share ideas and interact with fellow practitioners on a daily basis. The 'open studio' are also a good example of practitioners sharing their practice in public, once or twice a year 'solitary' arts studio spaces are opened to the world, the public are invited into the artist domain to see how and where they work, there are varying degrees of openness:

- Some literally open their doors so visitors see the unedited 'real life' day-to-day working environments,
- Some tidy and curate their spaces so they can hide and surface specific content they want to be viewed,
- Others present their spaces as a white cube exhibition removing all traces of the studio activity and practice,
- Some choose to not open their doors; what lies behind the door is a mystery to all.

The open studios could be seen as a good analogy for how staff may approach degrees of openness in their teaching practice, what can the outsider, student or colleagues see or understand about our teaching practice, is it important? From an A4 paper handout to internal VLE resources to copyrighted online open resources to creative commons open resources to copyleft resources. How do we open the doors to our pedagogic practice and use open technologies to demystify the teaching process?

### 1.9 Conclusion

Externalising courses and resources specifically practice based courses like Fine Art painting and sculpture for example could be seen as a tricky proposition, what actually happens on a Fine Art course? To the outsider it can seem a bit of a mystery, like the closed studio door. Could making a Fine Art course open be seen as destroying its mystery or does *'The teaching as mystery metaphor'* as Brookfield, S. (1995) suggests: "*excuses teachers from having to answer such basic questions as 'how do you know when you are teaching well?', 'how do you know your students are learning?' and 'how could your practice be made more responsive?'*" *Seeing teaching as mysterious works against the improvement of practice. If good or bad teaching are all a matter of chance then there is no point trying to do better. The teaching as mystery metaphor also closes down the possibility of teachers sharing knowledge, insights, and informal theories of practice since mystery is, by definition, incommunicable.*" In the current competitive climate for attracting students on courses, externalising the inner workings of course may quickly become an essential practice.

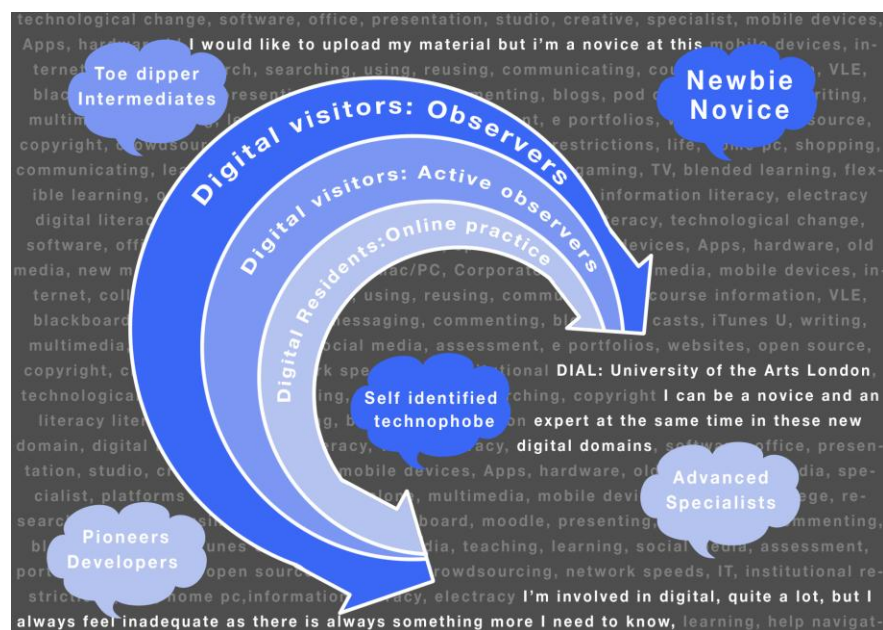
### 1.10 Open anxieties

To support a potential mass transition into the 'open' and to provide a sustainable framework to address and support students and staff in the new open world could educational social media content networks like **process.arts** provide the open local subject specific support a

community may need a sustainable support through crowdsourcing the combined experience levels of staff & students, participants may find their a novice and expert at the same time in these new digital domains.

### 1.11 New open world

UAL have identified a number of anxieties of aims to engage and bring together staff and students who are living comfortably with technology (the digital residents) and those who are learning to live with technology (the digital visitors) White, D. (2012) as a self-sustainable networked community.



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## 2. Film and audiovisual media open archives as OER: Sarah Atkinson

### 2.1 Context

Traditionally, the primary sources generated by filmmaking are housed within specific physical locations that are not easily accessible and not always open to the public. In the UK, the national film repository is the British Film Institute (BFI), some of the materials are available online, but only those that are not restricted by copyright issues. There are also a growing number of both subscription-based and open-access broadcast archives online, which include *Box Of Broadcasts (BOB)* a service delivered by the British Universities Film & Video Council (*BUFVC*) in the UK and *EU Screen* and *Europeana* in Europe. These house audiovisual assets such as newsreels, reports and documentary footage from television broadcasts. The equivalent archives within the fictional and dramatic realm of cinema are extremely limited, yet could be invaluable tools in the maintenance and preservation of cinematic and cultural heritage. As Gerhardt and Kaufman have noted 'This disconnect – perhaps we call it an 'A/V gap' – is largely a function of attitudes and behaviours within teaching, production, and publishing. It is also an outcome of the paucity of quality audiovisual work now available for educators. As we note in our 2010 Film & Sound Think



Tank film, *Knowledge Is...*, despite the leading investments of JISC and others worldwide, only 5% of our audiovisual history is digitized and available to educators and the public online' (2011:3). The recent film review undertaken by the Department of Media, Culture and Sport in the UK concludes: 'The percentage of material readily accessible by the public in National and Regional Archives remains very small in proportion to the size of the collections. Most of the film material held in archives around the UK is owned by rights-holders who understandably will only make their material available in a way that is consistent with their commercial interests [...] The material which is held in the UK's archives offers a wealth of opportunities for audiences; for users to appreciate its intrinsic cultural and artistic value, for people to learn about the world both as it is, and has been, through film, and to stimulate new creative work (especially in a digital age where legal repurposing of clips could drive innovation). But a set of interventions is needed to tackle the huge challenges around access and conservation, including intellectual property barriers, to ensure that these opportunities can be realised to the benefit of audiences throughout the UK'. (DCMS, 2012: 75). There are a limited number of disparate and disassociated online repositories and databases, which house the culturally rich resources of filmmaking and cinema across the globe. In the UK, the only known openly accessible online version of such an archive is SP-ARK. Internationally, in Japan the entire archive of prolific Director Akira Kurosawa has been uploaded and is freely available to view, access and download online, but is only currently available in the Japanese language. These exemplars are invaluable and enriching resources within film and cinema education, since in their exposure of all the materials related to a film production; photographs, video assist footage, casting recordings, scripts, storyboards and developmental paperwork, they reveal the often hidden creative practices of fictional filmmaking. As Mayer contends in relation to SP-ARK; 'It reflects the dailiness of labour involved in filmmaking as opposed to the heroic narrative portrayed in mainstream films' (2008:201). Within educational contexts, the access to such primary resources facilitates the close textual analysis and in-depth examination of films, practices that could not be achieved without such access. Such resources also have the potential to provide unique and unprecedented sites for communication, collaboration and the establishment of both online and physical networks. As the DCMS report highlighted, it is the key issue of licensing that appears to be foreclosing the development of open access to film and cinema resources.

## 2.2 SP-ARK

The SP-ARK archive provides a unique example of the successful marriage between the principles of open educational resources and open archives. SP-ARK is an interactive online project based on the multi-media archive of filmmaker Sally Potter. Potter is a world-renowned film director, known for her explorations into the potential of nascent technologies to enhance audience engagement and participation in her work. Her 2009 film *Rage* was the first feature film to be launched and distributed on mobile phones. Over the past five years, the archive has been developed to a Beta-testing level, and includes the intuitive visual navigation of one of Potter's films, *Orlando* (1992), and all of the related assets. All of the resources have been digitised and meta-data has been added relating to the items description and association with other assets. The copyright to all of the materials belongs to *Adventure Pictures*, and they have chosen to allow access and use of the materials via a Creative Commons licensing model. Users are able to view clips from the film as well as a myriad of associated materials including the scripts, storyboards, still images, location and developmental paperwork, using the intuitive visual browsing interface (see Figure 1 and section 2.4 for further technical details). Resources are initially organised in a linear taxonomy which aligns with the sequence of the film production process; Development, Preproduction, Production, Postproduction, Finished Film and Distribution (see the indexical sidebar in Figure 1). The materials within these processes are then organised within further drop-down subsections. Once an asset is opened, users are then able to continue browsing the archive in a non-linear and exploratory fashion by linking to the asset's 'related items' (for

every item is linked to other associated items) for example, a page of script is linked to its corresponding clip, which could then be linked to a call sheet, a continuity report, production design images, location notes etc.

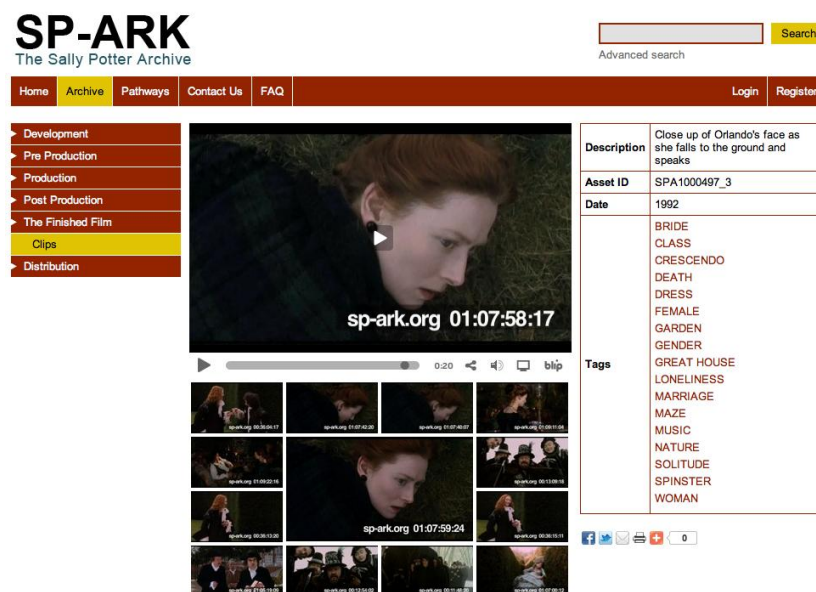


Figure 1. The SP-ARK Visual Browsing Interface

## 2.3 Pathways

This mode of browsing allows the user to build his or her own unique 'pathway' through the archive's content as they explore a particular theme or process; they are able to save items that they have viewed. This type of archival browsing which is embedded into the infrastructure of the site is not so easy to achieve through the boxed presentation of materials within a traditional physical archive. This intuitive browsing is extended and supported by the fact that users are able to annotate each individual item in their pathway, with their own comments, observations and streams of thought, as well as to describe and save the pathway itself. Other users are then able to access each other's pathways (when they click on an item all associated pathways are displayed) and to link to them which offer a further level of user-led archival exploration. Users are also able to directly communicate with one another using the messaging tool. This type of interaction leads to the deeper engagement with the materials, encourages the sharing of ideas and practices, and fosters the creation of a user-community around the archive's content. The SP-ARK resource exemplifies the successful combination of an archive and an educational resource within this feature, providing a unique model for social and participatory learning. The benefits that such a resource can bring to higher education academics and students are invaluable and as yet unprecedented. The pathways tool lends itself to the critical and analytical study of primary materials as intrinsic to both undergraduate and postgraduate study within numerous disciplines. The successful development and organization of such a resource has the potential to enhance and enrich teaching and learning practices within these disciplines, as well as to encourage other high-profile filmmakers and organizations to allow online access to their work in the future. Dr Charles Drazin has already used the pathways feature as an assessment tool on the Film Studies Programme at Queen Mary University of London (QMUL). The students were set a discussion topic through which they had to construct their answer within a pathway rather than a traditional essay format. Drazin noted that 'from a teacher's perspective what was great about the site was to be able easily to visit students' pathways and to see their thoughts take shape. It facilitated the provision of on-going feedback as students worked on their assignment in a way that is not feasible in traditional coursework'. In addition, students of the exercise also responded positively. The assets that the students identified, along with content

of the pathway could then be used as OERs themselves; as envisaged by the OER impact study suggesting ‘validating the sharing of online resources discovered by students’ (JISC, 2011: 25).

## 2.3 Visual Browser

The latest version of SP-ARK incorporates a visual browser which was designed and integrated as part of a Knowledge Transfer Partnership between *Adventure Pictures* and the Essex University’s Department of Literature, Film and Theatre Studies and the University of Surrey’s Centre for Vision, Speech and Signal Processing. Full explications can be read in Ren, Sarvas and Čalić (2010).

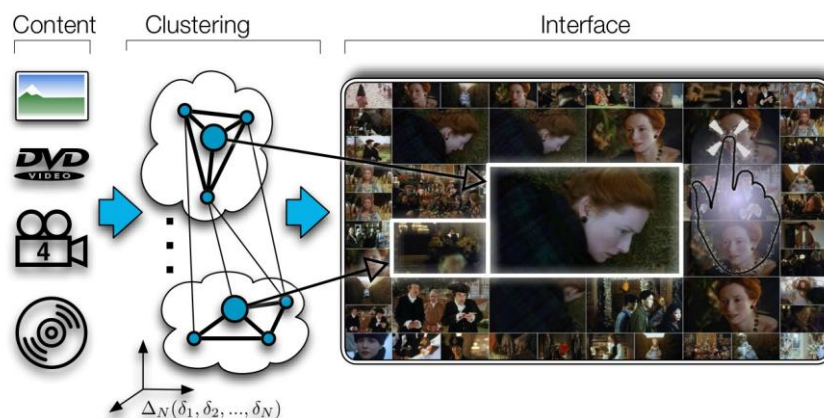


Figure 2. Block scheme of the interactive image browsing system

The visual browser comprises two modules: an image clustering engine, that derives the underlying structure of the database, and a hierarchical interactive interface depicted in the Figure 2. The size of every image in a generated interface layout is proportional to its similarity to the central image. The choice of the similarity metric is invariant to the type of clustering engine and/or the interface design, enabling generic application of this system. In case of SP-ARK visual browser, a chi-square distance between three-dimensional RGB colour histograms was utilized as the similarity measure. The shots were represented by a set of key-frames efficiently extracted using a method for video summarisation introduced by Čalić et.al (2007).

## 2.5 Conclusions & Next Steps

This case study will go on to test and report upon the educational potential of such an open resource within the fields of media and film theory and practice. The case study will include the facilitation of focus groups with students and staff at various universities. The focus groups will be used to demonstrate, explore and evaluate the potential of the archive as a teaching, learning and assessment device; and to collaboratively generate, develop and share open educational resources around the content of the archive. Currently, in addition to QMUL, students from Bucknell University, Pennsylvania USA studying Film and Media Studies and students on the Historiography course at the New York University are actively engaging with the archive. Their assessments are related to creating critically informed thematic reflections using the Pathways tool.

I have also devised a collaborative project with *Adventure Pictures*, which is currently underway. *The Anatomy of a Film Set: Exposing the people, the roles, the processes and the careers on set of Bomb* will create an interactive audiovisual ecology of a film set, capturing all of the individual crewmembers contributions to the creation of the film through personal testimony. This is a unique and unprecedented opportunity to open access to a notoriously closed area. The project exposes *all* the roles on set from runners and caterers to camera,

sound, costume, make-up, continuity, set builders, sparks, extras to heads of all the departments. This will be presented as an interactive computer application whereby the anatomy of the film set is presented in visual form so that the user can intuitively access the video diaries, photos and testimonies. This will be an invaluable and innovative resource for young people and students seeking careers in the film industry, and to educators and academics teaching film production and processes.

These initiatives seek to draw out the benefits and efficiencies of collaborative resource generation, exploring the challenges of sustainability and expansion of both the resources and the encompassing user-group community. The findings of the case study will not only inform the future direction of SP-ARK; an endeavor which has always placed the educational community at the core of its development (initially at the Screen School at Goldsmith's College, see Mayer: 2008) but also has the potential to support and inform the approaches of emerging online film-based repositories as they grapple with the issues of openness, reuse and licensing. The project ultimately provides an innovative example of Higher Education Institution and archive collaboration in action, which could in turn provide a compelling model for the development of open academic practice.

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# **Open to interpretation?: productive frameworks for understanding audience engagement with OER**

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## **Abstract**

At the core of evolutionary trajectories in the digital networked media and OER landscape, the notions of 'educational and learners' communities' and open 'participatory pedagogy' become more complex. Combining notions of 'mediation' from activity theory and communications studies to analyze a large body of literature and qualitative data offering insights on stakeholders motivations, perceptions, practices or uses, the paper considers the meaning of Open Educational Resources (OERs) as participatory learning media in a global context. It then draws on perceptions and uses of OER and open media by faculty, and structures dimensions of cultural and socio-technical mediation by this particular segment and focusing on two types of users: the teacher as active interpreter and salient user and the teacher as digital publisher. We argue that the socio-technical and pedagogical affordances and OERs, hinder many tensions pertaining: a) the definition of openness; b) quality; and c) moral authority regarding both context and adaptability

## **Keywords**

Mediated learning, open media, OER mediation, quality, use of OER, audience, prod-use

## **Introduction**

With just over a decade marking the introduction of OER, their definition as public and modifiable domain goods is increasingly being complemented by other forms of open media and learning spaces; this is also accompanied by a change in educational policy, particularly, in the elearning domain, seeking to promote the adoption of more open practices in teaching or the fostering of participatory pedagogies. Nonetheless, the co-evolution of landscape and discourse produce new opportunities as well as new tensions regarding the nature of openness or development regimes, and the diversity of open media, operating in a global context. Likewise the constellations of educational and learners' 'communities' and dimensions of 'self- and life-long learning' become more complex, notwithstanding the blurring of boundaries between public and private spaces for learning and study, the teacher and the learner, the producer and the interactive media user.

Understanding notions of open and participatory pedagogy means not only unpacking the diversity of genres in OER, and their mutual dependence with social arrangements in the OER/access movement; it also means understanding the different interpretations and appropriation contexts by users' and prod-users (Bruns, 2008) as well as the inter-locking of open granular or free learning media within formal education and informal learning.

To do so, as part of OLNET learning design strand, we conducted studies that would involve not only surveying the existing research literature and anecdotal accounts, but also, using a grounded theory approach to interviewing stakeholders from diverse projects and communities, advocates and implementation bodies as well as learners, organizing awareness workshops and conducting focus groups with faculty or collecting ethnographic accounts from public learning spaces. In this paper we focus on addressing questions as: What is the public understanding of OER and how it relates to open access and/or user content that can be re/used as learning media in a pedagogical context? How issues around branding or public awareness relate to notions of quality and legitimacy? How would we categorize the motivations/barriers to contribution (or engagement) of the different stakeholders within the



Drawing on Drotner (2008) among others, we argue for a theoretical framework that considers the *double analytics of mediation* in OER, a framework that combines cultural-historical and socio-cultural approaches in education studies (Engeström, 1987; 2001) with the concept of mediatization from media and communication studies. Contemporary applications from the former approaches emphasize the interpersonal, social and institutional aspects of meaning-making through digital and networked means, including, instrumental and organizational learning and professional development. The latter seeks to address both material artifacts and immaterial *processes* of meaning making (see Thompson, 1995; Carey, 1989; Silverstone, 1999; Drotner, 2008: 69-72) through media texts or institutionalized media.

We offer further explanation to this framework in the next section. Although a brief outline on the categories of users/use offered, space limitations do not allow further elaboration; In the last section we draw on perceptions and uses of OER and open media by teachers and faculty, and structure dimensions of cultural and socio-technical mediation by this particular segment and focusing on two types of users: the teacher as active interpreter and salient user and the teacher as digital publisher. We reveal that the socio-technical and pedagogical affordances and OERs, hinder many tensions pertaining: a) the definition of openness; b) perceptions of quality attached to both origin and publication; and c) moral rights and attribution, context and adaptability.

### **Mediation of learning about, from, through and within: Mediation and Mediatization of Resources**

Inspired by the Vygotskian notion of mediation – a term used to articulate how links are made between subjects and objects, between inner situations and external practices – and the categorization of mediating tools as *material* and *behavioural*, a series of theoretical developments ranging from Engeström's (1987, 1999, 2001) systems oriented activity theory (and its several generations thereof) to socio-cultural theories emphasizing the role of different forms of immaterial tools for the development of literacy. Säljö's work on computer assisted learning, for example, has been instrumental for putting forward the link between today's complex tools and media environments for situated cognition (see Bliss, Säljö and Light, 1999), and the link between conceptual and discursive knowledge (Säljö, 1999). Central in these approaches is the role of communication in learning processes.

Describing the third generation of activity theory, Engeström (1999) sees joint activity or practice as the unit of analysis for activity theory, not individual activity. He emphasizes the *process* of social transformation and includes the structure of the *social world* in analysis, taking into account the *conflictual* nature of social practice. Cole and Engeström view the 'reflective appropriation of advanced models and tools' as 'ways out of internal contradictions' that produce new activity systems (1993: 40).

While the third generation of AT introduced the notions of dialogue, multiple perspectives, historicity and networks of interacting activity systems, Engeström (2001) expanded the framework further to account for *contradiction* as the driving force of change in activity, and *expansive* cycles of learning as possible forms of transformation. In the relatively long cycles of expansive learning therefore, motivational and qualitative transformations, and the questioning or deviation from established norms sometimes escalate into a deliberate collective change effort. According to Engeström (2001: 137) 'a full cycle of expansive transformation may be understood as a collaborative journey through zone of proximal development [ZPD] of the activity.' This is empirically explored in terms of continuous professional development not only, or necessarily, attached to vertical processes, (i.e. aiming towards higher levels of competence), but also taking into account cycles of improvement –

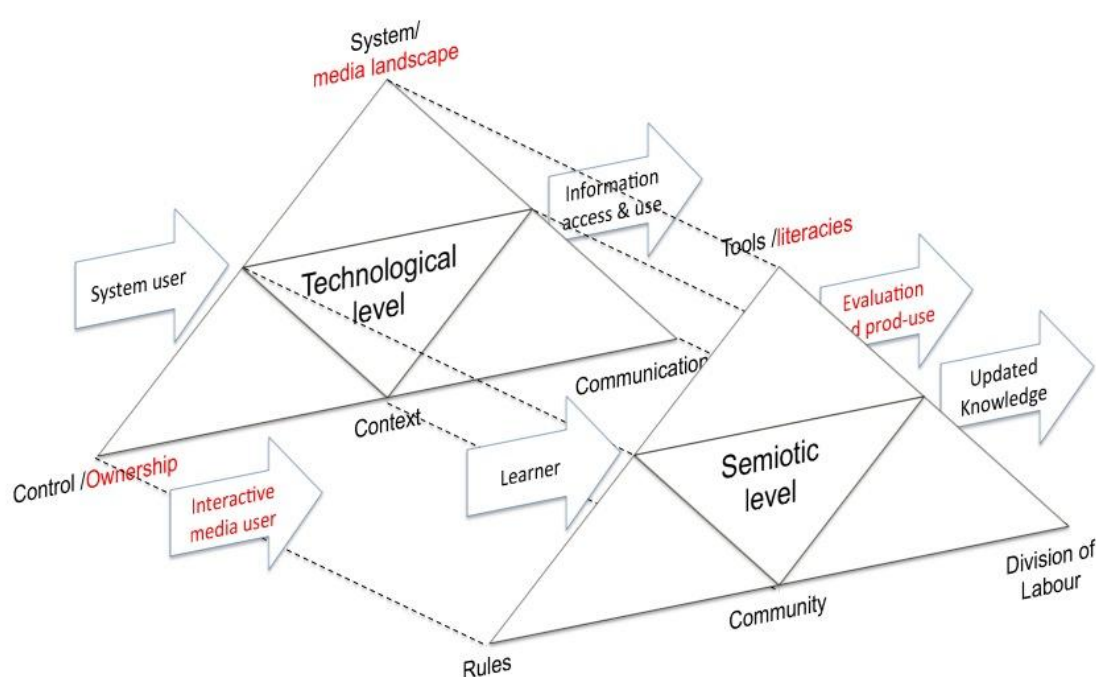
and expansive learning - achieved by residing, talking to, or working with and alongside individuals with similar skills or objectives (see Alevizou, Galley and Conole, 2012).

While the origin of the OER movement is located on the emphasis of *entitlement* (of access to, and adaptation of, free pedagogical material), the new wave of policy and advocacy initiatives focus on *transparency* enabled by the adoption of open educational practices; openness relating to the mediation of pedagogical knowledge, often relates to the pursuance of pragmatic possibilities or perceived benefits surrounding *effectiveness and quality*: “key tenet of open education is that education can be improved by making educational assets visible and accessible and by harnessing the collective wisdom of a community of practice and reflection” (Iiyosh and Kumar, 2008: 10, see also Geser, 2007 see also definition of *Open Educational Practices* ICDE, nd).

Combining a multi-angled approach to the third generation of activity theory outlined above with notions of creativity McAndrew (2011) offers a brief account surrounding the experiences of use of OER from the three perspectives of the organisation, the educator and the learner, bringing forward alternative motivations, tensions and benefits, and actual experiences in the public interpretation or social production of OER. The value of this approach is that it takes into account multiple sources of data for analysis when reviewing situations, while paying sufficient attention to key *contextual factors* and balancing the identification of negative indicators, such as contradictions and tensions, with the way in which objectives can be achieved.

As McAndrew concludes: “*Openness along with enough resources* of value and examples of practice may offer a route to learning at the edge of chaos that fits with other changes in society and reduces the dependence on ingrained institutions and approaches” (McAndrew, 2011: 7).

In principle, this multi-layered view outlined below can be repeated a number of times to represent difference perspectives, to capture both ways of learning and methods of working. Communication and social production with regards to learners’, educators’ or indeed to interactive media users’ expansive learning process are dimensions within the schema.



**Figure 1: Activity Triangles viewing a situation from alternative perspectives (adapted from McAndrew, 2011 and expended)**

As such, looking either at *historicity*, or indeed the ways in which OER operate within the wider landscape – open media within networks of interacting systems (e.g. Google, through individual navigation or social search), also needs to be addressed. Within this context what is it characterizes or distinguishes the use of OER from other media uses? Essentially, operating within a wider landscape of Open Media retrievable also through public search engines (e.g. Google) or public archives (e.g. Wikipedia) and hybrid platforms and formats (e.g. iTunesU, YouTubeEdu) means that OER operate within wider landscapes of media-tization, adhering also, to notions of topicality and cultural relevance. Likewise, the diversity of genres that be defined as open resources or media also requires different orders of coherence: a modular open encyclopaedia entry or a Learning Object can progress at different stages and have different voices (Benkler, 2005). Yet textbooks and study or learning environments may require more coordination in their social production and depend on educators' or institutions' measures (in terms of quality and culture) or on the ambitions of the system in which they operate or boundaries that they transcend (e.g. see community-led initiatives like P2PU, OpenStudy).

OER can be empirically explored through theories of mediatization (see Carey, 1989, Silverstone, 1999). They produced using media interfaces and are material tools that facilitate the storage, modification articulation and exchange of multimodal signs – operating in both commercial and public domains, and in different spheres of interpretation, private and public evaluation requiring complex literacies and social or peer arrangements for the, often, influx production. Likewise, while digital networked media have made horizontal processes and categories of text, production, audience obsolete, blurring boundaries of prod-use (Bruns, 2008) or prod-sumyion both liberate and complicate circuits of engagement among volunteer students and casual surfers, autodidacts or social learners (McAndrew et al, 2008), advocates or reflective teachers, open access/education activists and policy makers and situations of learning (formal and informal contexts). OER may indeed demonstrate how mediated educational and learning cultures are negotiated within *processes* of everyday life. They are *cultural* resources requiring labour (both material and immaterial, based on institutional or commons peer production models), *semiotic* codes of representation and signification (including perceived provenance), and affordances for openness and public citation or modification and reuse. Adopting a dual approach enables us too to specify the ways in which different technological tools enable the *social* shaping of meaning and emphasize particular interpretations (or reuses) over others, depending on they ways in which they are embedded within larger socio-cultural frameworks of legitimation and power (cf. Drotner, 2008: 72).

Looking at the circuits and trajectory of engagement in open educational practices and through resources is beyond the scope of this paper. Here we deploy some of the notions that bring about further challenges/tensions about the wider integration of free and collaborative technologies and how it relates with broader challenges on professional (expansive) learning (faculty).



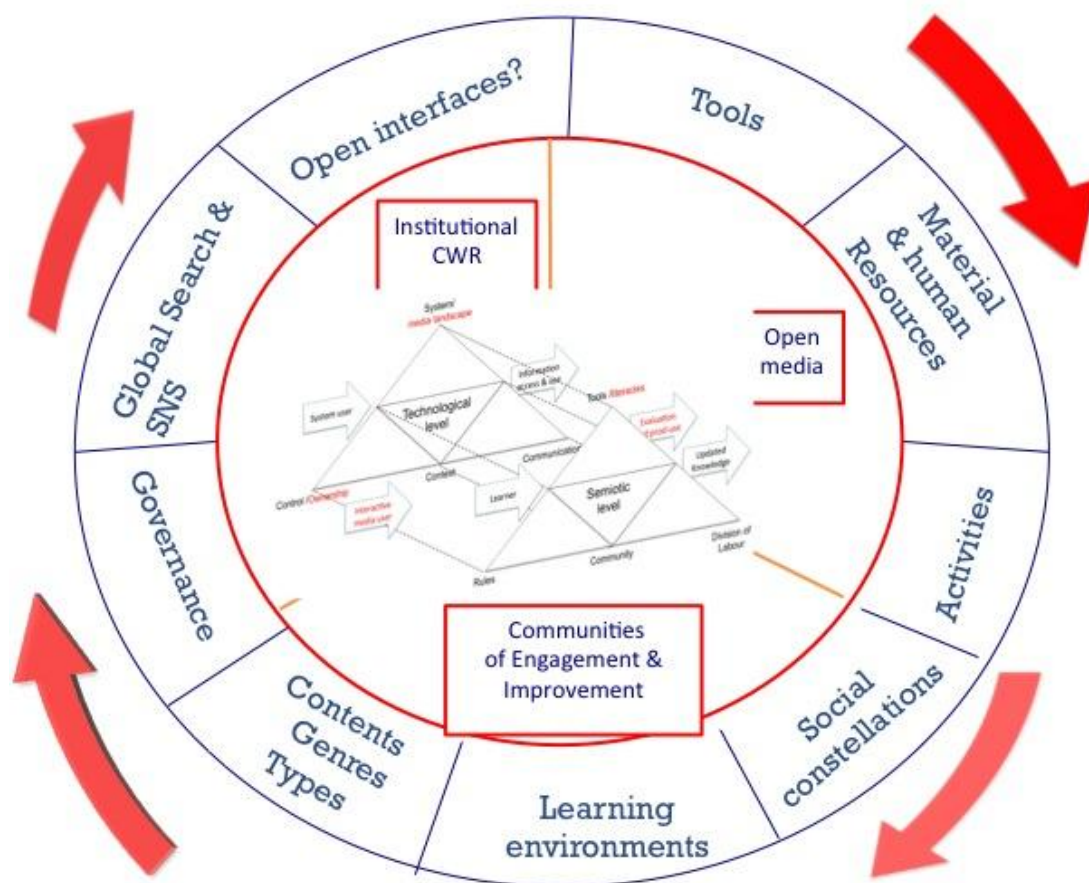


Figure 2: Multiple views and trajectories of mediation

### The teacher as surfer and private prod-user?

Those advocating the integration of social media within teaching and learning articulate a vision in which educators are co-innovators in understanding the key possibilities in the relationship between technology and pedagogy, leading towards a co-evolved professional knowledge base that stems from reflective practices that are mediated and shared; a practice that feeds into the development of curricular designs that can actualise educational visions (see Zhang, 2009: 278). Integration of technologically mediated, course management systems and the popularization of virtual learning environments, it is argued, not only improves the ‘translation’ of research in pedagogical contexts, but also more effectively activates existing knowledge as the foundation for new knowledge by continuous and mediated reflection and revision - scaffolding learning experiences for teachers (Collis and De Boer, 2005; Merrill, 2002). Search and filtering, to map which *objects* are good for a particular and situated educational context, is a routine process within academic teaching, constantly negotiated through discussions with colleagues, peers and students. Publication of courseware in the open (rather than in a walled garden) brings about other tensions about identity and quality or public reflection on pedagogical effectiveness.

A significant body of research is now available on how educators and learners are accessing and using OER materials (Harley et al., 2006; Hylan, 2006; Petrides et al., 2008; McAndrew et al., 2009; Conole and Alevizou, 2010; Masterman and Wild, 2011). Key findings in accord with our own empirical insights include:

- the desire to integrate new materials into their courses through the VLE to address students’ needs
- to improve their teaching methods and knowledge or benchmark quality of materials

- enhance personal knowledge and expertise
- to network with colleagues who had similar research-led (and) teaching interests

Yet the access to what is considered as an Open Resources, and indeed the definition of resources - focusing on affiliation, granularity and possibility for mediated modification or attribution - vary. As academic faculty and educational professional participants in four workshops and focus groups regarding the integration of social media in learning design revealed, embedding free materials and learning objects in courses is part of the current educational practice; to a large extent, this is through a continuous process of aggregation and filtering of content that is deemed fit for a particular context, modeling amplification and 'curation':

*I am often searching for videos that that are good metaphors for what I am trying to explain in the class or for case studies that are part of sequence in a relevant course. I refer to them, but I don't modify them...But I always look for a discourse, presentation and clarity in the approach that matches my style for ideas...*

[Social Sciences Faculty, Participant in Blended Design and OER workshop, UK]

*We search in specialized or inhouse media repositories, but we also look on YouTube and Flickr; Not sure if objects freely available are also free for modification and republication...Ekkk! The reputation of the provider or the producer or the production values and quality of the resource are important...*

*I am looking for in-house produced equipment configuration instructions. They are done by others, who have done the process for real. Trusted, credible, but may need changing. But they are good enough to use for engineering practical training.*

[Media and Broadcasting Training professionals in the UK: 2 Participants in OER awareness workshop]

Several sources of evidence suggest that Google, is often the preferred engine for searching materials, as returning more results than a given portal (OERTN, 2009), especially among those educators that are relatively unfamiliar with the scale and breadth of OER repositories. Our own research also has revealed that Wikipedia is perceived as positive resource with regards to direction towards academic or popular references and reference context for any particular topic and a good source for exercising information literacy skills – though tensions surrounding plagiarism are widespread. The quotes above confirm some evidence that for many teachers purpose-designed *learning* materials, are not necessarily, or always, the first place to go when they want to supplement their classroom materials – a case that is also true, on occasion, for designers of free courses or learning spaces in platforms like Wikiversity or P2PU. On the other hand, all faculty in residential universities reported that the process of modification and sharing, happens either among peers within a specific faculty or discipline, or through the walled-garden approach of the learning management system or through virtual learning environments and through physical corridors, peer networks and online subject specific scholarship. But the researching and reusing of 'resources' or 'media objects' is also part of an internalized process of negotiation and reflection in the development of teaching, similar to the adaptation and citation of references in scholarly writing, but not necessarily mediated as such, with issues around credit and moral rights or property, coming side by side by anxieties of influence and plagiarism, knowledge of IPR regimes or participatory expertise associated with interaction in commons based peer production:

*P2: I mean I, in my field in economics, I mean the easy thing to do, to take something from, say a table from somewhere.*

*P3: Yes.*

*P2: Then you build your own table based on it, and put a source line in. You're alright there. It's when you take a static image of it, and dump that Jpeg or whatever into...*

*P11: I find there are real issues in that. Because what effectively you're doing, is replicating knowledge, and for example, you're trying to teach students to evaluate..., and there is a logical precise statement of the result you've got, there is a logical procedure for deriving that. Ok there might be some variations, but essentially you're replicating...*

*P3: Yep.*

*P11: what someone else has done. And often this is done without acknowledgement to either the person or even the source. Because you understand what this is: its recreate- reproduce-able knowledge. It's just some internal reasoning that allows you to arrive at this completion. It's just logic, and yet something like that in education, politics, would be seen as plagiarism. And then when you have open educational resources. And that you access similar lectures and seminar notes. Actually for the most parts, I've sat down and I've recreated that knowledge from what I've been taught, because it's possible to do that in mathematics. And yet, I can't honestly say it's my.... I'm the owner of it.*

*P2: It only becomes you as an owner when you're talking about how you might learn from it. You know, the approach to teaching, or something like that. Which is yours, but the actual stuff its, as you say it's just logic, isn't it...?*

The issue of quality, in the private and public evaluation of a resource is in fact key and well evidenced in the wider review of the literature (see below); Here again we need to distinguish among the types of resources in terms of modularity and high order coherence (e.g. an encyclopaedia entry versus a lecture). Trustworthiness is often associated with a resource's origin (whether attached to an institutional repository's provenance or a creator that is key in a particular field), but high production values, originality and creativity are also highly regarded for media objects such as videos, images, etc. While breadth, and coherence, production values or qualities and field-specific evaluations are more in line with personal or public rating of materials.

Topicality and field/level specific relevance are important factors relating also to peers' pedagogic or scholarly recommendations for teaching specific subjects/modules. When more training or awareness raising regarding the abundance of teaching and learning resource sites is given to faculty, our workshops and interviews with educational professionals and learning technologists have revealed, that faculty often indicate increased interest, especially in sites that offer context, metadata and teacher-to-teacher interaction around the resources (see also OERTN, 2009), with emphasis to specific disciplines, fields and educational levels. Building communities and social networks around content found in specific subject-specific educational repositories and on the web, therefore, is key, and regardless persistent calls, few systems that provide effective collaboration spaces around the content in order to support better sharing of resources, that have not yet gained provenance in the mainstream.

As research in the field has indicated, educators' concerns over relevance and quality hinder use and reuse. The relevance of content incorporates several layers, e.g. examples from developed countries may not be relevant for students originating from other cultures, the pedagogy used may not be appropriate, or the level of the content may not be appropriate (Unwin, 2005; Selinger 2004). Quality can mean different things (including the legacy of the host institution in distance learning (e.g. Open University) or global provenance (e.g. MIT OCW); however, common quality issues include accuracy of the information and knowledge distributed in the content. Quality is also a matter of trusting the information provided (D'Antoni 2006, Hylén 2006), but also cultural relevance. Hattaka (2009) reveals how not

only factors related to content issues, but also language affect the actual reuse of OERs. Furthermore educational rules and restrictions in different countries, access, technical resources, intellectual property, awareness, computer literacy, teaching capacity, and teaching cultures play a role in limiting the adoption of open content. In line with our findings above, teachers often “see the content development process as self-development” (Hattaka, 2009: 7, 13) and are reluctant to merely copy materials provided by others.

This is also evident from our insights into faculty’s attitudes who are willing to open scholarship, but skeptical about open teaching approaches. Moreover, finding, assessing and modifying materials on the Internet is considered time consuming and excessively complex. Time constraints and issues around digital literacy are also impediments (see also Wilson and McAndrew, 2009). An additional issue deals with the lack of trust towards open content not provided by recognized institutions. This implies a limit to the idea of Web 2.0 communities as accredited producers of educational open content.

Barriers also include the tensions around field or epistemic contextualisation. Some educators mentioned that they would be delighted to share their own resources, but were also sceptical of context-independent resources. This suggests that if resources need to be 'granular' so they can be found easily, they also need an open interface to enable feedback and/or dialogue about 'reuse' in other contexts:

*P: I... I mean, we call it scaffolding in ELT, I don't know what you know, people call it. You know how you take a piece of content and build up and interact or class, you know, an interactive class around it, and it's the quality of the interactivity, and the way that the quality of the scaffolding, that support it, and the content is just one part of that. And yes it could come from the lecturer himself, and should probably most often because of pride, dignity and all that. But urm, you know it can also come from an external source.*

*P2: But again, I think that's quite discipline specific, because the content in terms of Bio Sciences, is, certainly, you know, say at first year level is fairly fixed. And it actually it's the way you teach it that's different, so, you know, we're going to teach the same content, and lots of different universities, basic bio-chemistry is basic bio-chemistry whichever way you look at it. And so, it's not the content that we need to share, it's how do we make it a bit more interesting, how do we present it in such a way that people engage with it. Whereas maybe with English Language it's, you've got the engagement, and you need the content to slip in, you know, the text or whatever it is, so, that's what I mean about requirements are quite different, depending on your discipline.*

[Science faculty in OER practice workshop/focus group]

### ***Teacher as publisher of pedagogical content...: attitudinal and pedagogical factors***

Motivations for contribution in OER platforms or Open Courseware repositories follow similar patterns to open publishing. Petrides et al. (2008) offer useful insights regarding ‘author’ use and reuse in OER. They focused on the Connexions platform and performed a rigorous statistical analysis of log files of activity over a five-year period, along with follow up interviews with a selection of participants within the platform. While the qualitative data provided insights into use and reuse practices, the qualitative data added depth to the findings by delving into the ‘why’ and the ‘how’ that goes behind use and reuse practices, collaborative authorship, as well as challenges and discontinuation of use and reuse. Among the factors influencing contribution and continuous use cited in the findings were, and these are in line with our findings (see also Alevizou et al, 2012; Conole and Alevizou, 2010, Taraborelli et al, 2011):

10. prior familiarity with publishing online content
11. a sense of improvement of teaching practices
12. Need to offer updated and timely content
13. and support in professional development, which helped feed a continuum in publishing, augmenting and re-using content

Incentives for persistent users include ideology, technical know-how and a recognition that this type of engagement helps their professional development; Networking with subject-specific instructors and teaching scholars across geographical boundaries is also a motivational factor. However, intermittent and eventual non-users (some of whom were also educators) are dis-incentivized by lack of technical skills, relevance of content, and reluctance to the idea of group authorship (see below for more about collaborative co-authorship and community structures).

Certainly, educators' prior knowledge and familiarity with Web 2.0 or technical skills, as well as wider OER advocacy agendas or general familiarity with openness and crowdsourced education, are also high in the motivational threshold.

The sharing of one's own materials and the reuse of others' OERs is less expansive (see Harley et al.; 2006; Petrides et al's (2008); Hatakka, 2009). Unless general attitudes to open sharing among those who understand open access is high, willingness or intention to make own's course materials available in an OER form is far less prominent. Evident in the literature and in our own research is that issues of ownership, confidence, relevance and quality are prominent inhibitors, alongside issues relating to legal constraints and technical literacy, lack of professional incentives and a culture (or expertise) in sharing and remixing openly. The last two aspects are closely associated with awareness raising strategies, policy and institutional support. As several interviewees note:

The one thing is the use of the technology, new technology and wikis. An the other is opening to the world, right. So that, that barrier has been well discussed I think. It's an emotional thing I think, cos play it out rationally, its advantageous to teachers largely, and researchers. But emotionally it's scary, they are unprepared, their resources aren't good enough, they think there might be commercial gains [Wikieducator Interviewee].

There is high quality threshold and self-censorship that is imposed by teachers themselves; and that's considered as barrier for creating additional courses for the OER platform...Additional awards should motivate people [OpenER Interviewee].

We need to make sure that OERs are not stand alone projects within institutions...When people invest time and resources, they need to see a tangible benefit: this could relate to students feeling that they are better educated; in a better way, in a different way. But it also depends on the institution having created a policy environment that is supporting faculty having dedicated their time and energy [OER Africa Interviewee].

Despite these barriers there is evidence that over time, positive attitudes regarding motivation exist and a recognition of – among those that participate in relevant initiatives – positive influence in research, teaching and learning practices.

Most importantly, evidence suggests that teachers who indeed publish in an OER platform form enjoy the benefits of localised and global exposure with respect to scholarly and

scientific communities, engage better with their students (prospective, current and alumni) and improve their teaching practices and experimentation.

Connexions and Wikieducator have also been used as platforms for educators to experiment with and publish widely in a variety of fields for all levels of education including vocational education and teacher training; The sites serves as an apprenticeship platform for educators by allowing them to observe how others in their respective fields communicate with each other and also to publish their own contributions, or improve others' content, which can be relatively small – echoing 'legitimate peripheral participation' (Lave and Wenger, 1991) that is characteristic of open source communities:

I think, generally, we fit nicely into those models where you have now the opportunity to re-use, in fact teachers are going, 'oh..., you mean I don't have to take this book as it is, I can re-arrange the chapters'... That's the first one, and then the second one is 'oh you mean I can put my own work in there, oh...'. And so those, those are evolutions that take place. Then they'll try more, and some will be adopters, some won't be...[Connexions Interviewee].

This allows educators to 'learn to be' open, co-creators; in this instance by peripherally participating in 'improving' and adding their own perspectives and experiences from using resources in respective contexts – similarly to adaptations of scholarly literature in research papers. Such experimentation can result in a cycle of more experimentation and engagement with peers and hence contribute to a gradual transformation of departmental, and eventually, institutional cultures.

Variations in higher education institutions regarding 'OER-readiness' exist, with universities with expertise in, and pre-existing structures to, support distance learning having a competitive advantage over residential institutions, both in terms of infrastructure and institutional support. But having and maintaining a strong vision, along with advocacy and inclusive strategies for supporting teachers and students, is also deemed paramount, in both distance and residential universities. Increased engagement with content for prospective and home students is cited as a common incentive at both institutional and faculty levels. This increases the opportunities for pre-practicum and personalized learning. In addition, making student contributions (such as seminar notes, lab reports and personal reflections through blogging) also available in a open-courseware form, is seen by educators as an important factor for improving teaching and learning and for creating more open and participatory cultures.

## Conclusion

The paper presented an approach to researching the double analytics of mediation in OER and offered a brief account of perceptions and engagement among different categories of educators as active audiences and prod-users, highlighting some aspects surrounding the pedagogy of content creation and the notions of publication. It is argued that the multiple articulations of '**mediated learning**' and (global) '**learning media**', framing the **socio-technical and pedagogical affordances** and OERs, hinder both opportunities and impediments and many tensions surrounding both interpretation and publication focusing: a) the definition of openness pertaining established and emerging 'brands' b) the nature of participation and self-representation in niche repositories or disciplinary communities, and c) the inscribed and actual purpose as well as quality of open resources.

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## **Openness in English Language Teaching**

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### **Abstract**

This paper will introduce different yet complementary empirical studies as part of the TOETOE (Technology for Open English – Toying with Open E-resources) project, managed by Alannah Fitzgerald, with SCORE and Durham University's English Language Centre (DUELC). Teaching participants involved in an initial OER cascade project carried out at DUELC, Jeff Davidson, Terri Edwards and Lesley Kendall, all experienced practitioners in English for Academic Purposes (EAP), will present their first-hand experiences of engaging with open practices for the first time with the design, development and delivery of innovative OER for EAP courses. OER in open file format were developed for teacher and learner training across two different EAP student cohorts (intermediate and proficient users of English) for enhancing student writing and vocabulary acquisition in the students' specific subject domains. Both students and teachers made impactful changes in their language learning and teaching practice by utilizing a range of open content and open tools.

A variety of innovative OER were employed in the study, including: open corpora derived from Google n-gram and Wikipedia collections as part of the FLAX (Flexible Language Acquisition Project) based at the University of Waikato in New Zealand <http://flax.nzdl.org/greenstone3/flax>; open source tools for text analysis found in FLAX and in the Compleat Lexical Tutor <http://www.lextutor.ca/> centred at the Université du Québec à Montréal with the Centre for the Study of Learning and Performance at Concordia University in Canada, and; open source software for building your own corpora, AntConc, established at Waseda University in Japan <http://www.antlab.sci.waseda.ac.jp/software.html>.

Leading English Language Teaching (ELT) practitioners were also interviewed by Alannah Fitzgerald about their work in promoting openness in ELT. An exploration of the different motivations for those practitioners' commitment to the open agenda will be presented, including reasons for: sharing and endorsing OER and open practices for ELT; building open corpora and open platforms for data driven language learning, and; developing open source software for interactive language learning tools. A widening OER for EAP stakeholder vision will also be presented in the context of informal and formal learning communities who are now engaging with these types of OER for language learning. This is based on two scoping exercises attached to the TOETOE project, involving the newly launched OER University's (OERu) prototype 2012 plans for accreditation and curriculum development and exploring where OER for EAP would be a 'good fit', and the newly formed web resources sub committee within BALEAP, formerly a British organization but now with an outreach mandate to become 'the' global forum for EAP practitioners. It is envisioned that by identifying how these different stakeholders collaborate around OER for EAP within formal face-to-face (f2f) and distance education as well as informal education routes via not-for-profit organizations such as the OERu will provide insights into how effectively OER are discovered, used, shared and sustained with a view to how greater synergy can be realized between these different communities of practice.

### **Keywords**

AntConc, British Academic Written English Corpus, British National Corpus, Compleat Lexical Tutor, Corpus Linguistics, Data-Driven Learning, English for Academic Purposes, English Language Teaching, FLAX - Flexible Language Acquisition, Open Access, Open

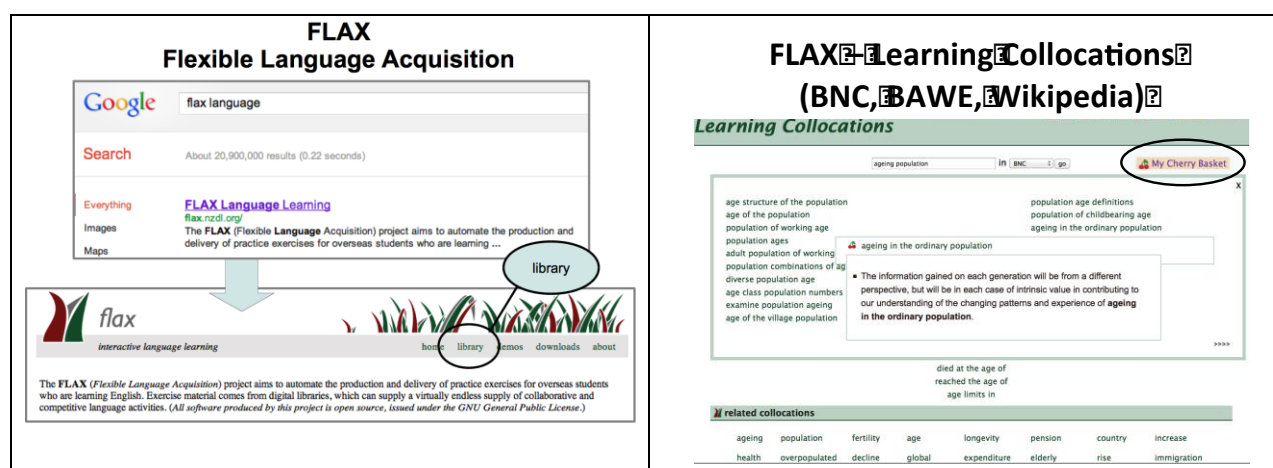
### **A Wide-Open Landscape for Enhanced English Language Resources**

Trialing open resources for English language education is at the core of the TOETOE project. This involves the development of training resources to engage potential end-users, namely language teachers and students, in the research and development cycle of specific OER for ELT. Feedback is encouraged on their experiences of using the resources along with suggestions for further design iterations of the OER to achieve more beneficial and manageable outcomes for their language teaching and learning needs. Among these resources is an exciting suite of open corpus-based tools and collections that effectively link and utilize both open and proprietary English language content. This paper will draw on corpus-based tools and resources from three projects that are promoting openness in ELT: FLAX, the Lextutor and AntConc.

Organizations responsible for managing valuable corpora such as the one hundred million-word British National Corpus (BNC) housed at the British Library, along with the British Academic Written English (BAWE) corpus of 2671 proficient pieces of assessed university student writing gathered from across the disciplines and managed by the Oxford Text Archive, are cognizant of the fact that proprietary corpora such as these do not benefit from being closed to further research and educational resources development. To further exemplify this trend in openness for English language resources, Google has released collections of n-grams from web pages and made them available on the Linguistic Data Consortium's website. It seems that even Google realizes the value of releasing linguistic data as part of their web archiving activity for the purpose of enhancing computational linguistics research into the present and changing nature of modern languages as they are captured on the ever-expanding Web.

The FLAX project is a highly successful example of the digital infrastructure mentioned above for linking proprietary corpora, including the BNC, the BAWE and a processed web-derived n-gram corpus made up of a trillion tokens supplied by Google, with open content from Wikipedia and Wikionary. For example, within FLAX's Learning Collocations collection, open source text analysis tools based on Greenstone's digital library software enable easy-to-use functionality for the search, retrieval, presentation and storage of phrases from the BNC, the BAWE and Wikipedia, which are all authentic and highly contextualized examples of English in use. Comparisons for how these English language phrases are used in context from across the corpora and within their sub-corpora are further enhanced with dictionary, thesaurus and encyclopedia resources that are made available via FLAX's simple interface which has been designed for non-expert users, namely language teachers and students. These phrases are contextualized further by being linked back to the live Web for a dynamically updated experience of the language collections for data-driven learning via Yahoo's search engine (for further information on the development of the FLAX language collections and tools, please see Wu, Franken & Witten, 2009 & 2010; Wu, Witten & Franken, 2010).

Figure 1. FLAX Language Learning via the Web and the Learning Collocations Collection  
Source: <http://flax.nzdl.org/greenstone3/flax> Accessed on March 01, 2012.



This paper will attempt to broaden the stakeholder vision for the effective uptake of these pioneering corpus-based OER for language learning, especially in higher education settings. The first phase of an OER teacher and learner training cascade discussed in this paper occurred within a traditional f2f classroom setting at DUELC and will be further cascaded to teaching practitioners who belong to the BALEAP network in the UK. However, discussions are also underway with the collaborative development of prototype OERu courses for online delivery in 2013, including one on college composition, and how these open corpus-based resources and tools can be offered as part of an innovative approach to support the teaching and learning of EAP. As this work continues to develop evidence will be gathered and subsequent case studies will be shared as to how these OER can be successfully used anywhere through their adaption to suit different language teaching and learning needs.

### A Training Resource Deficit in Data-Driven Learning

Most teachers working in EAP and general ELT, whether they are teaching in f2f or online environments, receive no formal training in the use of corpus-based resources, either for language analysis or for the creation of language learning support resources in their teaching. In turn, this creates negative transfer whereby corpus-based resources are being under-exploited by learners of English. This is despite the plethora of published research, and to a lesser extent teaching resources, dedicated to data-driven learning (DDL), a term coined by Tim Johns to refer to language learners engaging with large corpora to derive understanding of real-world language use in context (Johns, 1994).

Problems with accessing and successfully implementing corpus-based resources into language teaching and learning scenarios are numerous, however. Until recently, a lot of the concordancing tools referred to in the research have been subscription-based proprietary resources (e.g. the Wordsmith Tools), most of which have been designed for at least the intermediate-level concordance user in mind. These can easily overwhelm language teaching practitioners and their students with the complex processing of raw corpus data that are presented via complex interfaces with too many options for refinement. Likewise, a lot of the published research in the form of articles, chapters and the few teaching resources available on DDL are often restricted to and embedded within subscription-only journals or pricey academic monographs. For example, Berglund-Prytz's 'Text Analysis by Computer: Using Free Online Resources to Explore Academic Writing', is a great written resource for where to get started with OER for EAP but sadly the journal it is published in, Writing and Pedagogy, is not free.

## OER Cascade Training

Initial corpus-based OER for EAP training were developed and delivered during the 2012 Epiphany term at DUELC for use with FLAX, the Lextutor and AntConc. Emphasis was placed on directly involving four EAP teaching members of staff with the project manager of TOETOE via focus group meetings to discuss the design, development and delivery of OER for EAP. In this way, useful decisions for training resource design and development iterations were implemented. For example, training video clips recorded in Camtasia and uploaded onto YouTube for demonstrating different tool functions in FLAX and the Lextutor were decided against for classroom use and instead slides in OpenOffice and PDF formats (available at <http://www.slideshare.net/AlannahOpenEd/>) were used to guide the participating students through step-by-step demonstrations and freer discovery activities to enable more hands-on experience with the tools.

An exception was made with the YouTube training videos for AntConc developed by Laurence Anthony. These were used in the later OER cascade training sessions where it was determined that the students had already progressed through basic concepts for data-driven learning and were ready to embark on building their own corpora using AntConc. The aim of this session was to build corpora based on required reading texts from the students' specific subject domains to identify key vocabulary and phrases found in their subject areas. This followed on from a demonstration of the Range tool in the Lextutor <http://www.lextutor.ca/range/> which has the same functionality for helping to highlight subject-specific or off-list words. One of the advantages of using AntConc is that once you have downloaded the freeware onto your personal computer you no longer require an Internet connection to analyze the texts in your corpus, most of which will be copyrighted. Nor are you limited to uploading only 25 plain-text reading files as is the case with the Range tool. AntConc is an invaluable concordancing tool for those students who are faced with large reading loads, and who would benefit from noticing key lexical patterns as they appear in the published writing from their fields for transfer into their assessed writing.

Figure 2. AntConc Freeware Homepage and Tutorial Videos via YouTube

Source: [http://www.antlab.sci.waseda.ac.jp/antconc\\_index.html](http://www.antlab.sci.waseda.ac.jp/antconc_index.html) Accessed March 01, 2012

The image shows two side-by-side screenshots from a web browser. The left screenshot is the 'AntConc Freeware' homepage, featuring a header with the title and 'Laurence Anthony's Website'. Below this, it lists software versions (AntConc 3.2.4w, 3.2.4m, 3.2.4u) with download links and platform-specific instructions (Windows, Macintosh, Linux). The right screenshot is titled 'AntConc Video Tutorials' and displays a grid of four video thumbnails. The thumbnails are labeled: 'Getting Started', 'Tutorial 1: Concordance Tool - Basic Features', 'Tutorial 2: Concordance Tool - Advanced Features', and 'Tutorial 3: Concordance Plot Tool - Basic Features'. Each thumbnail includes a play button icon and a video player interface. A URL is visible at the bottom of the right screenshot: [http://www.antlab.sci.waseda.ac.jp/antconc\\_index.html](http://www.antlab.sci.waseda.ac.jp/antconc_index.html).

In an interview with Russell Stannard, a leading ELT professional and developer of the highly successful Teacher Training Videos (TTV) website <http://www.teachertrainingvideos.com/> for free technology teacher training videos for teachers, suggestions for remixing the cascade training OER and releasing them as training videos via TTV for greater dissemination of the training activities were discussed. In this way, it was agreed that an already popular open channel for the promotion of free resources in language learning and teaching, TTV, would enhance access to these OER. Adjustments will have to be made to the cascade training OER

to support a wider user group who will be accessing these OER online for self-learning purposes before they are released in the near future. Interviews with the primary developers of the FLAX, Lextutor and AntConc projects have been requested in relation to the OER training cascade at DUELC and permission permitting will be discussed in the presentation that accompanies this conference proceedings paper at Cambridge 2012.

The participating EAP teachers observed all of the training sessions once. They were also encouraged by the project manager to assist students with the training activities so as to instill confidence with using the tools and collections that they would then be teaching in subsequent cascade training sessions with different cohorts of students. It was recognized that teaching within a team to assist larger groups of students within a computer lab setting was also useful to ensure students who learned at different paces would have the necessary tutor attention time to develop the necessary understanding and skills to continue to work independently with the open tools and resources beyond the computer lab sessions. One cohort consisted of 30 registered students but on average we had 15-20. As mentioned earlier, a further-reaching goal of the TOETOE project is to involve teachers and students in the research and development cycle by feeding back to the developers of these open tools and collections their experiences of their use and what they would like to see developed further to assist with their particular needs.

In future OER development work for the TOETOE project, the focus will broaden out to include the collaborative design of teaching support OER for use of the corpus-based tools and resources in classroom as well as in online EAP teaching. After discussions with the participating OER cascade teachers, it has been established that it would be better to use Open Access publications where possible in classroom teaching for work with discourse-level instruction for improving student vocabulary, reading and writing in EAP. If the texts that teachers use in their teaching are derived from open publications it is more likely that the publishers and authors of those texts would look favorably upon requests for their use as OER to be shared across the educational community. Conceivably, this would not only mean that teachers' valuable pedagogy for teaching aspects of EAP would no longer be locked down by the common practice of using copyrighted texts which have not been cleared to the detriment of sharing beyond the classroom or the institutional Virtual Learning Environment (VLE), but it would also mean that with the adoption of Open Access texts for the development of OER for EAP the open agenda of the Open Access movement would be further enhanced.

What is more, readings assigned for out-of-class learning could also be uploaded into FLAX by teachers and students to engage with many of the automated text activities for self-study, like those in the demos section of the website <http://flax.nzdl.org/greenstone3/flax?a=fp&sa=demos>, for example, collocations matching and guessing, fill-in-the-blanks, and related words exercises. Many teachers would agree with the research that due to time constraints, the explicit teaching and learning of key vocabulary and their collocations during class time is often the neglected variable in EAP and general ELT (Farghal, M., & Obeidat, H., 1995).

### **Learning Collocations in FLAX**

The main developer of FLAX, Shaoqun Wu, devoted her entire PhD thesis to the development of open tools and resources for the advancement of a learning collocations system for English language learning (Wu, 2010). Without question, collocations are one of the hardest areas for students of English to master due to the sheer size of collocational patterns as expressed by native speakers in the target language. Research shows that the successful use of collocations in student writing and speaking supports not only improved levels of accuracy but also improved levels of fluency in their use of English (Wray, 2002; Nesselhauf, 2003).



The Learning Collocations collection in FLAX as seen in Figure 1 earlier provides a dynamic user interface for searching one- and two-word combinations for collocation phrases across three corpora: the BNC, the BAWE and Wikipedia. It was determined by the FLAX development team that student texts from the BAWE would serve as an achievable model for academic writing for EAP students, and that this corpus of student texts would serve as a starting point if linked to wider resources, namely the BNC and Wikimedia resources (Wikipedia and Wikionary), thereby providing a ‘bridge’ to more expert writing. Participating teachers and students of the OER cascade viewed the affordance of being able to search for related or relevant collocations, along with definitions of key terms and concepts in the wider context of the resources in this collection, as assisting with the brainstorming of a chosen topic area.

Table 1. Student Writing Extracts - Including Collocations and Related Collocations for the ‘Ageing Population’.

Source: DUELC student writing extracts from 4 essays on the ‘Ageing Population’, incorporating language items in FLAX <http://tinyurl.com/cubdm7b>. Accessed on March 11, 2012

<p><i>Text 1:</i> population ageing was one variation; older people</p> <p><i>Text 2:</i> the number of people of a working, taxable age will become stagnant; projected growth of the aging population in developed countries; therefore, an ageing population means the current generation will benefit from the previous generation; governments in many developed countries have started to provide incentives for elderly individuals to encourage them to remain in the workforce; seeking to recruit from the growing numbers of retirees; raise the retirement age; an ageing population has connotations of a being a burden to society</p>	<p><i>Text 3:</i> the population in Britain is ageing and life expectancy is rising; ageing as a serious issue for modern society; life expectancies are on the rise; this essay will discuss the features of ageing; institutional care systems could be a funding problem of ageing in any society; the ageing problem</p> <p><i>Text 4:</i> as a shift in the distribution of population towards older age; rising longevity; the ageing population as a global phenomenon; people of working age</p>
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Students from one of the cohorts in the OER training cascade were assigned readings on the topic of the ‘ageing/aging population’ to prepare for a timed writing exam on the same topic. In demonstrating the Learning Collocations collection in FLAX using the phrase the ‘ageing/population’, students were encouraged to search and store collocations related to this topic that could help them in their writing exam. Of the 8 students who attended this OER training cascade session, 4 of the essays demonstrated greater flexibility on discussing the given topic of the ageing population. 13 students in total completed the exam, of which 9 essays repeatedly showed the fixed expression ‘the ageing population’ throughout with no variation. However, those 4 essays from participants in the OER training cascade session had managed to draw on collocations and related collocations from FLAX to achieve a more flexible use of derivatives for the terms ‘ageing’ and ‘population’. There were also more instances of related words and collocations being expressed in the composition of extended phrases on the topic as can be seen in the student writing extracts in Table 1 above. Avoiding repetition has always been a stylistic preference in academic writing and this involves the flexible use of synonyms, derivatives and extended phrases as demonstrated in these four texts.

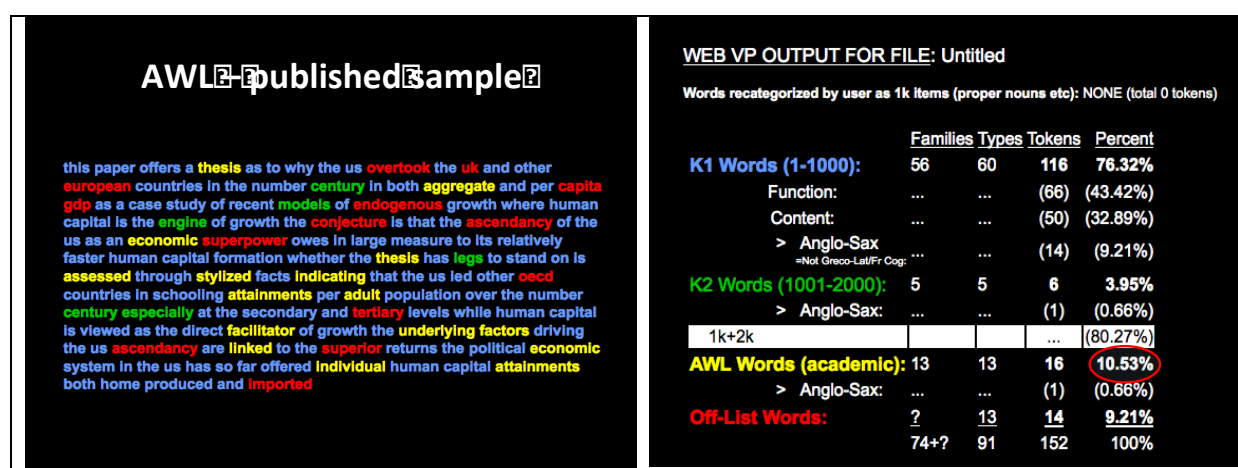
An additional feature of this and many of the collections in FLAX is the Cherry Basket function, whereby the facility for students to select and store identified language items is made possible by allowing these items to be viewed and printed directly from the FLAX website. All of the teachers involved in the OER training cascade expressed the need for a student log-in area on the FLAX website whereby searched and selected language items could be stored for students to revisit on subsequent returns to the site with perhaps the possibility of basing automated vocabulary learning activities on these stored items.

### Academic Word List Text Analysis Activities

The Academic Word List (AWL) was developed by Coxhead in 2000 and this has been one of the most impactful resources in EAP to date. It is comprised of a group of 570 headwords that are common to published writing across the academic disciplines and builds on the work of the General Service List (GSL) of 2000 of the most frequently occurring words developed by West in 1953.

Figure 3. VocabProfile Published Text Analysis Output from the Lextutor

Source: <http://www.lex tutor.ca/vp/eng/> Accessed on March 01, 2012.

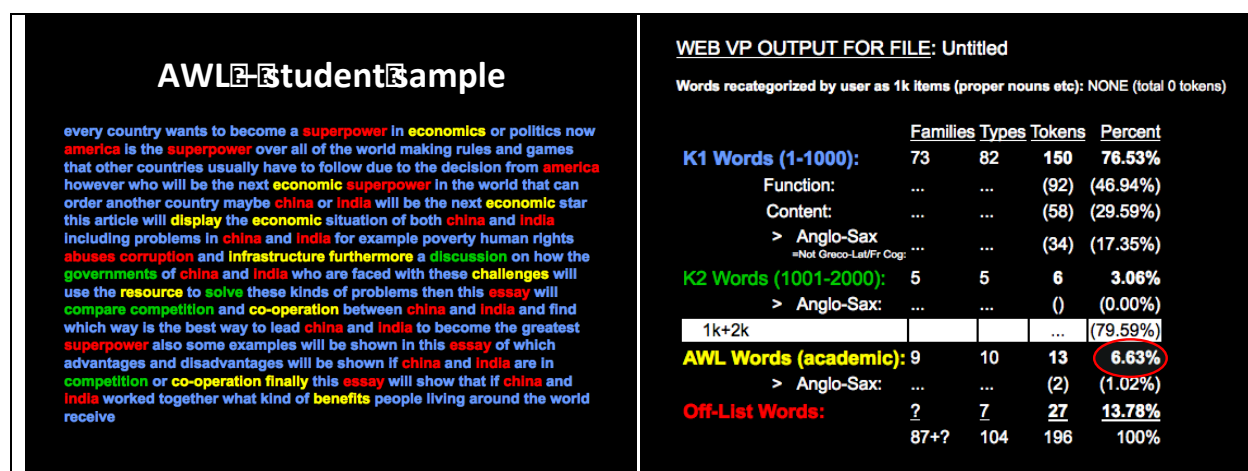


Coxhead's research indicates that approximately 10% of the words generated from a broad sample of academic writing can be found in the AWL. The VocabProfile tool in the Lextutor <http://www.lex tutor.ca/vp/eng/> analyses texts to determine what percentage of the words belong to the AWL and in most cases a lot of published writing including writing from the domain of journalism will conform to Coxhead's finding and return a count of at least 10% of words from the AWL. This is also a useful tool for students to determine whether 10% of the words in an assignment or report they have completed for their academic coursework come from the AWL.

Figure 4. Student Writing Sample Analysis from VocabProfile in the Lextutor

Source: <http://www.lex tutor.ca/vp/eng/> Accessed on March 01, 2012.

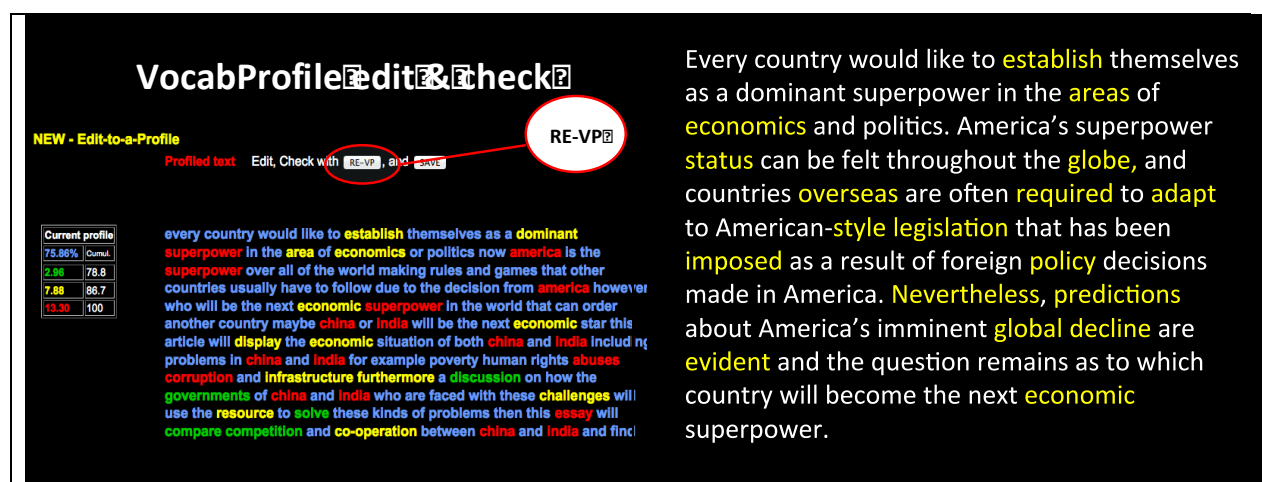




In one of the OER training cascade activities we asked students to bring to class samples of their writing in soft copy format so that they could analyze the percentage of words from the AWL that occurred in their writing. One student from the MA TESOL programme at DUELC who is a native speaker of English was surprised to learn that his essay when analyzed only returned a percentage of 6% of words from the AWL. Figure 4 above shows an analysis of a pre-sessional student essay on the topic of the ‘next economic superpower’, and once again an analysis of this essay shows that only 6.63% of the words used are from the AWL with a lot of repetition of the same key word, ‘economic’ occurring throughout. When studying the AWL it is important to learn the derivatives of the 570 headwords as well as the most frequent collocations that these words occur with in academic and more general published writing.

Figure 5. The Lextutor VocabProfile tool showing Academic Word List items in yellow and their percentage within a student abstract before and after consulting the AWL using the RE-VP tool

Source: <http://www.lex tutor.ca/vp/eng/> Accessed on March 01, 2012.



The VocabProfile tool in the Lextutor also has the added functionality of a RE-VP feature whereby you can edit your writing directly on the screen by trying to bring the number of AWL terms present in your writing up to and beyond 10% as can be seen in Figure 5 above. In this OER training cascade session we asked the students to consult the AWL on the Victoria University website where it is housed at the School of Linguistics and Applied Language Studies <http://www.victoria.ac.nz/lals/resources/academicwordlist/>. From observations of the two classes who were assigned this task of trying to raise the percentage of AWL items using the RE-VP tool, we noted that the students were impeded by having to navigate back and forth to the AWL resource which exists on a different website. If the AWL

could be directly embedded within the VocabProfile tool in the Lextutor then this activity would not have been so cumbersome. Once again, by successfully linking and presenting resources in a way that helps students notice and generate the target language is the type of open resource that would be appreciated within the English language teaching and learning community.

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## **OportUnidad - Open educational practices: a bottom-up approach in Latin America and Europe to develop a common Higher Education Area**

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### **Abstract**

This paper draws on the OportUnidad project co-funded with support by the European Commission under the EuropeAidALFA III Programme. OportUnidad multi-actors include twelve Universities from Europe and Latin America (Bolivia, Brazil, Colombia, Costa Rica, Ecuador, Italy, Mexico, Peru, Portugal, Spain, United Kingdom, Uruguay). European partners involved are: Università degli Studi Guglielmo Marconi (coordinator, Italy), Universitat Oberta de Catalunya (Spain), University of Lisbon (Portugal), University of Oxford (UK).

The OportUnidad project explores the adoption of strategies and channels that embrace the principles of openness and reusability within the context of educational institutions. The project intends to foster the adoption and pilot of open educational practices (OEP), OpenCourseWare (OCW) and OER in Latin America as a bottom-up approach to develop a common Higher Education Area. The initiative also opens the possibility to provide free educational resources for self-learners, in terms of informal and lifelong learning.

Based on the analysis of best practices worldwide, the project defines the OEP Agenda which outlines policies and actions to maximise the benefit of the use and re-use of OER for university course development in Latin America, as mean of the equal and democratic access to knowledge.

The Agenda includes items related to pedagogical approaches for OER (including teaching and learning aspects and links to social learning, constructive learning with peers), technological solutions for OER (including key technologies, standards, specifications. i.e. metadata, publishing, querying and infrastructure), organisational frameworks and procedures (roles of different actors in institutions to build OER, to re-use and remix OER and cost-effective procedures for OER), institutional business models (how do OER affect the institutional business models), cooperative models for OER between institutions.

Based on the OEP Agenda, LA universities define an institutional roadmap, i.e. a declination of the Agenda to the local, cultural and institutional framework. It is a local-contextualised plan in a global strategic plan.

Local teachers and educators will be trained to the use (and reuse) of OER and OCW through an on-line training course organized in a logical sequence going from the presentation and framing of the OER and OCW movement, until the integration of open practices into mainstreaming activities.

The on-line training course will include the understanding of the OER movement, the definition of OER, OEP and the main related initiatives OpenCourseWare and Universia, the aligning of OER to course requirements and pedagogical pathways, the OER search in repositories and on the Web (identification) and OER reuse, remix, rework, localizing (repurposing), the creation of OER from scratch, the OER plan for action, incentive and inhibitors of these open practices and the OER sharing to the community.

This paper details the rationale behind the OportUnidad action, highlights the challenges and notes the successes and culminates with conclusions on how openness of resources can bring new possibilities of learning to on-campus students and also beyond the walls of the institutions.

**Keywords:** open educational resources, open educational practices, higher education

### **1. OportUnidad in the context of Latin American Higher Education**

Learning resources are often considered as key intellectual property in a competitive Higher Education (HE) world, nevertheless many institutions, faculty and individuals worldwide are sharing their own over the Internet openly and for free. OER can be considered a relatively new phenomenon which may be seen as a part of a larger trend towards openness in HE and democratization of access to education. The two most important aspects of openness are refer to free availability of resources over the Internet and low restrictions on the use of them. There should be no technical barriers (undisclosed source code), no price barriers (subscriptions, licensing fees, pay-per-view fees) and as few legal permission barriers as possible (copyright and licensing restrictions) for the end-user. A significant amount of OER is already available online but because of unawareness of their existence or the lack of specific knowledge on how to integrate them into actual practices of learning, this rich worldwide repository rests underused.

Above the surface is a small amount of highly visible licensed OER that officially bears the name of the institution and below the surface, often invisible beyond a specific course, is a much greater volume of reuse of other 'non-OER' digital resources by staff and students (White, D. Manton, M.; 5)

As a consequence of the high, although still to be developed potentialities of OER, OportUnidad project aims to foster the adoption of open educational practices (OEP) and resources in Latin America, as well as to support HEIs and other relevant actors to progress towards the creation of a Common Higher Education Area in Latin America and Europe (ALCUE).

Open educational practices (OEP) are defined as practices which support the production, use and reuse of high quality OER through institutional policies, which promote innovative pedagogical models, and respect and empower learners as co-producers on their lifelong learning path. OEP address the whole OER governance community: policy makers, managers and administrators of organizations, educational professionals and learners (cfr. ICDE – International Council for Open and Distance Education).

There is general consensus that international cooperation between Higher Education Institutions (HEIs) in the EU and LA is mutually beneficial not only in terms of improving education results, but also in terms of exchanging multidisciplinary knowledge, research and new teaching and learning opportunities. Essential features to contribute to strengthening the process of regional integration in the area of Higher Education in LA and promoting its synergies with the EU system.

Indeed, there is an established understanding that easy and open access to educational resources favours the integration of those institutions that are not formal education entities but can be benefited for these initiatives of vulnerable and and/or social excluded groups into society. It also contributes to improve the skills of the workforce as well as facilitate the re-skilling of those who are outside of the world of work. In the middle-long term it could even

improve the living standards and decreased the existing poverty levels in the region, thanks to the access and exposure to validated knowledge.

The OECD adds that “upgrade training could help counter skill obsolescence while re-training for a different occupation could be the best solution for workers displaced from declining sectors.” (OECD, 2011; 221).

The availability of accessible retraining options would also allow the workforce to re- or up-skill. More flexible features, such as the ones suggested below (OECD, 2011; 220), could make the return to learning easier for adults:

- A modular structure allowing learners to take only the parts of a course they need to re-qualify;
- High-quality training systems to provide learning credits for skills that are transferable between fields/occupations; and
- Part-time learning opportunities for those who want to continue working.

Also the role of such open access in reducing social inequalities, fostering cultural understanding and supporting education worldwide, is often acknowledged.

Beyond the mere availability of resources, it seems to be evident that teachers and students need to develop skills and knowledge to make a proficient use the resources availability. They can't “Google” their knowledge, but what counts more is the capacity to learn lifelong, to think, research and find information.

OportUnidad strengthens the principle of openness in education as a key driver for innovation in HEI. It is a matter of when and how – and not if – open practices including free access to validated knowledge becomes the dominant paradigm in the modern HEIs.

There is heightening evidence that universities need to open up their campuses, breaking down the barriers that have traditionally kept out those not directly involved in the programs, inviting students coming from not traditional routes and adult learners to share the academic richness of the modern-day universities. The ways in which universities may open their campuses are manifold and diverse: releasing the resources for free and for all is one increasingly popular and bottom-up approach of ensuring access to a wider community beyond the HE community.

OportUnidad understands the necessity to embrace integral and also inclusive actions that will be meaningful and relevant for the local beneficiaries. That is why this initiative envisions a multilevel and bottom-up intervention which articulates three key dimensions: contents, platforms and the cultural aspects, which are briefly described as follows:

- Contents: understood as educational resources or practices which are openly and freely shared, promoting its continuing remixation (re-usability), updating and sharing;
- Platforms: hardware and software designed to simplify the interoperability of their resources, facilitating semantic structures (improving its findability) and the use of open standards and open source software that decreased its costs and trigger its adoption;
- Cultural Aspects: promoting the awareness; explaining the value of the openness; describing the educational and also the inter-institutional benefits; not only identifying best practices but implementing the needed incentives to foster these practices in a variety of teaching-learning environments.

## **2. OportUnidad objectives and expected results**

Openness in HE seems to be the baseline for the equal and democratic access to knowledge. If universities really want to be competitive and to invest in better teaching and research, it is essential that the open sharing of resources is encouraged. Knowledge must be shared and

spread, teachers encouraged to network and collaborate on course development and institutions discouraged from replicating the same educational materials.

Using freely available resources teachers and students can collaborate on compiling course material and resources. The learning experience will be significantly enhanced due to greater involvement. Before this can be realised, a change of awareness is needed related to what we mean by education, teaching and learning. We need new attitudes towards collaboration and new literacy. That is the challenge facing education today.

From an operational point of view, the specific objectives of the OportUnidad project are to:

- Raise awareness and widen HEI participation in open educational practices and resources;
- Define the OER Agenda for the re-use of OER at HE institutional level;
- Define a mid-term strategic roadmap for the implementation of the OER Agenda at local-institutional level according to the local, cultural and institutional needs and strategies;
- Teach faculty on how to use and reuse OER in a pedagogically-rich context;
- Promote faculty peer-to-peer learning for ensuring the local sustainability of the initiative
- Pilot start-up open educational practices that provide to learners up to date open contents and flexible learning paths;
- 

To reach the specific objectives the project provides the following outputs:

- Create a compendium of EU-LA OER practices based on EU and LA experiences;
- Build an agenda of OER re-use for university courses development;
- Trace roadmap(s) of open educational practices, as a declination of the Agenda to the local, cultural and institutional framework;
- Offer a 80 hours on-line training course in “Open Educational Practices and Resources” for university teachers
- Provide a 40 hours of assisted start-up of open educational practices in university courses as part of the implementation of the roadmap;
- Report on the pilot lessons learned as a result of the experimentation of the on-line training course and start-ups including tips and tricks for an efficient re-design of the Agenda, roadmap(s) and on-line course.

### **3. OER awareness raising: towards an Open Educational Practices Agenda**

Based on the analysis of best practices worldwide, the project defines the “Open Educational Practices Agenda” which outlines policies and actions to maximise the benefit of the use and re-use of OER for university course development in Latin America, as mean of the equal and democratic access to knowledge.

The Agenda includes items related to:

- Pedagogical approaches for OER, including teaching and learning aspects and links to social learning, constructive learning with peers;
- Identification of technological solutions for OER, including key technologies, standards, specifications (i.e. metadata, publishing, querying) and infrastructure;
- Definition of the organisational frameworks and procedures: roles of different actors in institutions to build OER, to re-use OER and cost-effective procedures for OER;
- Definition of the institutional business models and OER: how do OER affect the institutional business models;
- Definition of cooperative models for OER between institutions;

- Collection of feedbacks on the Agenda from non-partner universities selected by partners;
- Definition of a model of OER re-use for university course development.

Based on the general framework of the OER Agenda, each University, including fellow universities, will define an institutional roadmap for the implementation of open educational practices at local/institutional level. It is a declination of the Agenda to the local, cultural and institutional framework. It is a local-contextualised plan in a global strategic plan.

It is expected to gain many roadmapping applications, from setting scientific research agendas to technology plans. Partners will also guide the construction of the institutional roadmap(s), making sure that it sets a clear future objective and answers the critical "why-what-how-when" questions that define and explain a clear action plan for reaching the objective.

#### 4. Training of trainers to openness in education

Local teachers and educators will participate in an on-line training course designed to provide conceptual and operational tools for the use (and reuse) of OER, and organized in a logical sequence going from the presentation and framing of the OER and OCW movement, until the integration of open practices into mainstreaming activities.

The OER Training course is of approximately 80 hours and it targets faculty use of OER into their teaching and learning practices. It is intended also to foster the adoption of open educational practices.

The units are organized in a logical sequence going from the presentation and framing of the OER movement, until the integration of OER into the faculty course proposals (fig 1).

The course syllabus includes:

- Understanding: OER movement, initiatives, purposes, history, and challenges;
- Defining: OER, OEP (open educational practices), OCW (Open courseware), Universia;
- Aligning: OER to course requirements and pedagogical pathways;
- Identifying: OER search in repositories and on the Web;
- Repurposing: OER reuse, remix, rework, localizing;
- Creating: OER from scratch;
- Implementing: OER plan for action;
- Engaging: OER sharing to the community.

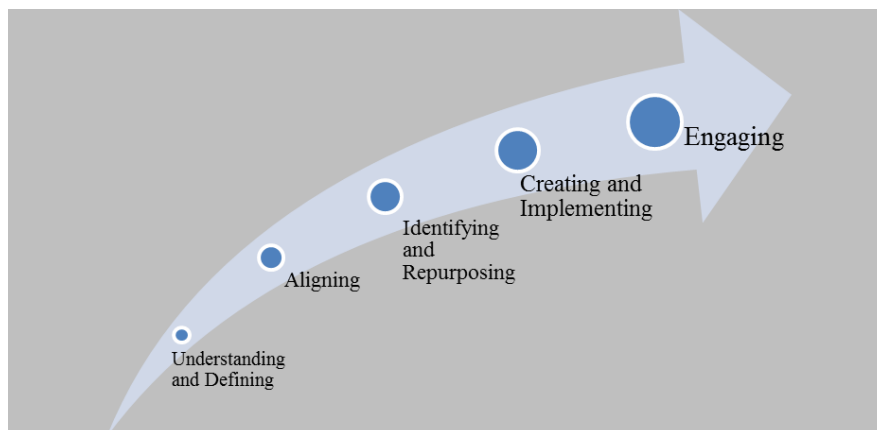


Fig.1: Stages of the on-line training course in “Open Educational Practices and Resources”

The course resources will be integrated mostly by available OER. Emphasis is given to the start-up of OEP, through the elaboration of learning activities that gradually assist the



professors in the integration of OER into their own courses and practices. Additionally, the course aims at motivating the faculty to get involved in the OER community and actively participate in the creation and diffusion of OER.

Teachers and educators will pilot the on-line OER course and will be assisted for the start-up of initiatives that integrate OERs into their own courses and practices according to their institutional roadmap. The Course is expected to run in the second half of 2013. Ongoing webinars will be organised by external experts in the field of OEP and opened to an interested general audience. Towards the assessment of pilots and the lesson learnt during the pilots, the general Agenda and the local roadmaps will be re-designed and validated for implementation after the end of the action.

## **5. Conclusions**

As long term results, the OportUnidad initiative will engage with the existing OER initiatives in the region and it expects to foster the role of universities in providing knowledge not only to their on-campus students but also beyond the walls of institutions to disadvantages groups (i.e. low income peoples, disables, indigenous), adult learners, and students coming from non traditional routes.

Additionally, an increasing level of quality of contents is expected as a long term result of the initiative. Actually, users will reuse OER because they know (recognition) and trust (reputation) the author. As a first consequence, if original, thoughtful and helpful work contents are delivered, authors will build a reputation. OER creators have to bring real value to the table and this means increasing the quality of contents.

Once authors that share contents as OER have followers (colleagues' educators, students, users) who respect their work and who watch out for what they will publish next, they need to maximize recognition. Effects of the quality of contents and on the creation of long-lasting networks are anticipated as a long term result of the project.

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## **ORBIT and OER4Schools: supporting effective primary and secondary school practice through OER**

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### **Abstract:**

This paper describes two interlinked projects: ORBIT and OER4Schools. Both projects seek to support more effective teaching practice (in primary and secondary education) through the use of Open Educational Resources (OER), appropriate pedagogy, and ICT. The ORBIT project is part of the JISC OER programme, and the first formal OER programme at the University of Cambridge. It develops an “Open Resource Bank for Interactive Teaching” (ORBIT) to promote interactive teaching of mathematics and science in primary and secondary schools in the UK. ORBIT is aimed at use in formal Higher Education (HE) teaching (e.g. PGCE), use in training schools and by teacher mentors, as well as continuing professional development for in-service teachers. It makes existing higher education expertise on teacher education as widely available as possible. ORBIT focuses on practical aspects of interactive teaching and enquiry-based learning, illustrating pedagogical principles through concrete lesson plans and ideas. The ORBIT materials are hands-on, presenting actual activities within lessons as the primary building blocks, with theoretical ideas explicitly embedded within these blocks. We seek to make this particular approach – a hallmark of effective teacher education – more accessible and tangible. Within ORBIT, there is also a significant focus on the use of digital tools and resources within the teaching of mathematics and science, which is an important emerging area and one which is notoriously lacking in effective pedagogical support. A collection of ORBIT resources will be collated into a self-contained open digital course book.

The OER4Schools project has similar aims, but is aimed at a developing world audience, in particular Zambia (and Sub-Saharan Africa more broadly). OER4Schools produces professional development resources that can be used in pre-service education or in-service by groups of teachers working together and ultimately sharing practices with others. Like ORBIT, OER4Schools supports interactive teaching and collaborative, active learning through using ICT tools, digital OER and Open Source software – as appropriate for teachers’ own purposes and settings. The materials are being anticipatively developed in conjunction with local stakeholders, including teachers and teacher college lecturers, as well as a broad range of partners, such as iSchool, OER Africa, TESSA, VVOB, University of Zambia (UNZA), Chalimbana University, and the Ministry of Education. The resource will feed into existing teacher education programmes (at universities and teacher education colleges), such as the Primary Distance Learning Certificate at Chalimbana University, which is studied by 4000 students a year and offered by other colleges too, potentially reaching most primary schools throughout Zambia.

Research and evaluation is a key component of both projects, for instance investigating pathways for translation of theoretical knowledge into teaching practice, benefits of open resources and open academic practice, as well as questions around content discovery and re-use.

**Key words:** ORBIT, OER4Schools project, interactive teaching practice with OER, pedagogy, and ICT

## **What is ORBIT?**

The “Open Resource Bank for Interactive Teaching” (ORBIT) is a project developing an open programme (and an associated resource bank) aimed at use in formal HE teaching (PGCE), use in training schools and by teacher mentors, as well as continuing professional development for in-service teachers. This will make existing higher education expertise on teacher education as widely available as possible to other teacher education providers both within HE and otherwise, through:

- ensuring that relevant and high quality resources from existing and disappearing collections (both produced within HEIs and by practitioners) are made openly available to the teacher education and school teacher communities,
- developing additional materials where these are needed to fill gaps, and
- contributing to broad collaboration and synergy in OER on teacher education, both within the UK, and between the UK and other countries, such as the United States.

ORBIT supports teaching and learning in a significant part of an initial teacher education course, in areas such as an HE-based 1-year PGCE course in primary education or secondary mathematics or science (or a school-based training programme), by primarily focusing on interactive teaching in these two subject areas. Mathematics and science are key curriculum subjects, with which the ORBIT team has significant expertise, and a focus in this area also fits well with the government's current prioritisation of STEM (science, technology, engineering, mathematics). It is funded by the Phase III OER programme from JISC. The project also focuses on practical aspects of interactive teaching and enquiry-based learning, by illustrating pedagogical principles through the creation of concrete lesson plans and ideas. The ORBIT materials are hands-on, presenting actual activities within lessons as providing the primary building blocks, with theoretical ideas embedded within these blocks. We seek to make this particular approach – a hallmark of effective teacher education – more accessible and tangible. There will also be a significant focus on the use of ICT within the subject teaching of mathematics and science, which is an important emerging area, and one which is notoriously lacking in effective pedagogical support.

A collection of materials drawn from the ORBIT project are also being collated into a self-contained open digital course book, which will be presented in a range of formats to suit students, but also in print. As the book is open, students will be free to duplicate, re-use, and adapt content as they see fit. The materials in this open book in return form a high quality core from the ORBIT database itself, and as such would be eminently suitable for teaching a course or programme on interactive teaching. The open course book will likewise contain sections relevant to teacher educators, who will be able to use these to make their own work with trainee teachers as effective as possible.

From an OER perspective, a key innovation is that materials published as part of the ORBIT project are not just a loose collection of materials (of varying quality), but actually form a coherent set of selected, high quality materials throughout, i.e. suitable to form a self-contained open course. This endeavours to address an identified need both for open textbooks (as opposed to collections of OER materials), as well as the need for sound, high quality OER materials that meet the needs of interactive teaching in primary and secondary schools. We are also working with commercial publishers (such as Cambridge International Examinations and Cambridge University Press) to explore new publishing models in the context of this resource, and aim for the book to be available in print or as an eBook as part of a publisher's portfolio.

## **ORBIT Project outputs**

In terms of open resources, there are three main project outputs. The first output is the ORBIT resource bank itself, containing lesson ideas/plans, associated with pedagogical ideas as well

as subject information (not a resource bank of what we often understand by OER such as images or videos as resources in themselves). Resources are being tagged, for instance according to grade, subject, and pedagogical principles, and users can make their own collections. For the ORBIT project, we both 'create' as well as 'collect' thus the database will contain:

- new resources developed in conjunction with school-based mentors,
- existing OER collections, which are fully or selectively imported into the ORBIT, and drawing on existing lesson plans available through OER sites,
- resources procured through engagement with communities of teachers and other resource portals, to encourage contributions.

The ORBIT project also includes a growing register of other OER providers in this area, links to OER search engines, and other aggregate sites, allowing users of ORBIT to find further relevant interactive teaching resources. Each resource in the database includes professional studies and subject-specific elements, together developing pedagogical content knowledge. There are also opportunities to place “teacher educator notes”, as well as notes for self-guided professional development in the database.

The second major output is the self-contained 'open course book' itself, which is a collection of ORBIT resources (i.e. a series of lesson ideas, together with subject/pedagogical notes and exercises), but brought into a coherent order (e.g. giving equal weight to the key pedagogical ideas), together with a number of additional chapters (such as an introductory chapter, and then a brief chapter introducing each pedagogical idea). The book will explore various themes common to primary and secondary, but with examples suitable for different grades that teachers can access according to need. It is intended that the course book will be available in a large variety of formats to suit different learners and environments. One area that is already in development is a chapter titled: “Working with Mathematicians” which is being developed with colleagues from the NRIC project (<http://nrich.maths.org/about>). We are working, as previously mentioned, with publishers to explore open publication models, and expect the open course book to be published in paper or as an eBook through a publisher. Both ORBIT outputs are becoming available through a dedicated institutional wiki. Use of state-of-the-art distribution mechanisms (including discovery through aggregators and building connectors to other repositories), however, are very much at the heart of our project, and we continue to draw on previous experience of the project team, for instance through the JISC-funded Steeple project. The course book itself will form a self-contained unit that is very easy to distribute and re-use, particularly for individuals. We also aim at allowing others to create additional books as they see fit.

The third output focuses on project communication, project evaluation, as well as more formal research outputs. We intend to re-use as much open content as possible, but there are important questions around how easily this content can be discovered and re-used. We are also interested in measuring benefits of such open academic practice, and will compare closed and open approaches with regard to users' perceptions of educational effectiveness. It is clear that community building is an important aspect of this, and we are mapping our existing communities, and evaluating how easily we can continue to connect with these (both on a technical resource-sharing level, as well as on a social level). It goes without saying that these outputs are published under a Creative Commons license.

### **Collaborating with partners**

A key tenet of the project is integration with other initiatives and partners, where content and technologies can be made openly available. For the ORBIT database, we draw on and consolidate materials from our own teaching and from major faculty research and development projects and beyond, such as:

- **NRICH:** this award-winning project (<http://nrich.maths.org>) aims to enrich the mathematical experiences of all learners. To support this aim, members of the NRICH team work in a wide range of capacities, including providing professional development for teachers wishing to embed rich mathematical tasks into everyday classroom practice. The NRICH website contains thousands of free mathematics enrichment materials (problems, articles and games) for teachers and learners from ages 5 to 19 years. All the resources are designed to develop subject knowledge, problem-solving and mathematical thinking skills.
- **T-MEDIA:** this ESRC-funded project captured digital video exemplars of classroom strategies for making effective use of data projectors and interactive whiteboards to support teaching and learning in secondary mathematics, science, English and history. The work produced a series of 5 unique, interactive multimedia resources for use in professional development, viewable at <http://t-media.educ.cam.ac.uk/>. Follow-up studies have demonstrated their value to in-service teachers.
- **The IWBs and Dialogue project:** this group worked collaboratively with expert practitioners to develop a whole class 'dialogic' teaching approach using the interactive whiteboard in primary, middle and secondary schools. Links to the resulting open video resources and other professional development materials are available at <http://dialogueiwb.educ.cam.ac.uk/>. The materials help teachers to exploit this increasingly prevalent classroom technology in a way that is more productive for learning.
- **Geogebra software and community:** this project offers CC licensed mathematics software & materials for learning and teaching. It includes interactive graphics, algebra and spreadsheet materials suitable for school to university level <http://www.geogebra.org/cms/>

In relation to the IWBs and Dialogue project one of the associated teachers commented that “it is concerning that in throwing out the National Strategy (which is not easy to access via the web archive) some excellent and still-relevant materials have also been lost. This project (i.e. ORBIT) would be a good way to ensure they continue to be easy to access.” Thus ORBIT is additionally offering a route to enable such materials to remain accessible.

### **ORBIT value to the community**

We are integrating ORBIT tightly both with the existing OER communities in the UK and internationally, as well as with the teacher communities the Faculty is already engaged with. ORBIT outputs are expected to be valuable for:

- formal teaching (PGCE) across HEI, including Faculty of Education teaching;
- teachers and mentors in training schools (such as Comberton Village College) and school-based teacher education providers, who can use ORBIT to build capacity at schools for professional learning, particularly in the light of proposed policy changes;
- newly qualified and in-service teachers wanting to continue developing their practice beyond their initial teacher education;
- teachers studying outside a formal programme, who will be able to use ORBIT to upskill themselves.

The current project is timely in several ways. First, the work takes place in the context of the UK government proposing far-reaching changes, including a controversial shift towards more school-based teacher training. The high quality resources available through ORBIT demonstrate the significant expertise, excellence in teaching, and practical knowledge available through higher-education-based modes of teacher education. The ORBIT project makes the case for a cautious approach in shifting teacher education to schools already overwhelmed with other initiatives. Ofsted’s own evidence indicates that high quality HE (incorporating school placements) is superior to even the best school-based training at present,

because it offers an in-depth approach to teacher education, including the necessary theoretical underpinnings.

Secondly, a new national curriculum is expected to be implemented by September 2012. Our resource bank is made available in time for these significant changes, offering teacher education providers and schools valuable and timely resources. At present, while we do not know exactly what the subject curriculum for primary/secondary will look like, although it is likely to contain a set of core ideas for each year of education. There will also be a “school curriculum”, focussing on subject pedagogy. As the subject curriculum and the school curriculum are released (later this year), stakeholders will need to take a step back, and evaluate the way forward. In that scenario, our resource provides guidance to teachers and teacher educators on how to work with and implement the curriculum in the most meaningful way.

The project is also timely within the Faculty and the University itself. We hope that this project will be an opportunity to kick-start a University-wide process, by initially opening up some resources from one Faculty with a nationwide reputation for excellence in its teaching and research, paving the way for future initiatives elsewhere in the University. As part of the project, we are also communicating more widely within the University to engage other departments in open education.

### **The OER4Schools project**

The OER4schools project has devised and evaluated a programme of school-based continuing professional development (CPD) in low-resourced primary schools in Zambia (Human Development Index of 0.430, rank 164 out of 187, Human Development Report 2011). The project introduced portable computing technologies (netbooks, tablets, projectors and calculators), digital Open Educational Resources and support for both ICT use and interactive forms of pedagogy for mathematics and science teaching. The programme is conducted in partnership with Zambian institutions and developed for the particular cultural context of sub-Saharan Africa, where large classes, poorly qualified teachers and rote learning methods are typically found.

It was created to meet the needs of teachers for support in engaging students more actively and collaboratively in the learning process and in exploiting the potential of ICTs, where available, to assist that process. It builds on recent approaches to CPD that sustain transformation of practice by encouraging situated, peer learning and dialogue, classroom trialling of new ideas, and on-going reflection on pedagogical practice (e.g. Butler et al. 2004; Hennessy et al. 2010; Nehring et al. 2010; Wells 2007). The CPD programme included remote communication between teachers and the Cambridge team, focused on curriculum requirements and associated lesson plans; short periods of intensive field work based around classroom trialling of new pedagogical approaches and post-lesson, iterative joint lesson planning and review; workshops for teachers and partners, including use of video exemplars of classroom practice.

The first phase of the project, a pilot study in three schools, indicated that the new methods had profound impacts on the dynamic of classroom interaction. Student engagement, understanding and attendance, interactive teaching and class discussion, practical work and group work increased. Phase 2 involved a subsequent research phase in the same schools, culminating in professional filming of interactive lessons to produce unique, high quality video exemplars of mathematics and science teaching in Zambia – with and without ICT. These video clips are used as a stimulus for discussion, along with accompanying texts and practical activities, within an evolving multimedia professional learning resource. This open

resource supports different modes of learning, including face-to-face and blended learning, online or offline.

The OER4Schools project is underpinned by three key elements: Interactive pedagogy, OER and ICT. These three key elements are linked through a participative approach to professional development and to international development more broadly. Our research to date has elicited a set of guiding principles for CPD in this and similar contexts. These include giving teachers ample opportunities to reflect upon and discuss their own lessons and to pinpoint areas for development before making suggestions; providing a lesson plan template; head teacher and other stakeholder support; creating a safe and respectful environment where new strategies can be trialled, and taking a participatory approach at all levels.

At present, our intervention in Zambia continues, and our CPD materials (along with a small ICT installation) are being used in a rural school serving an under-privileged community. A Zambian teacher (and participant in OER4Schools Phase 1) is now leading a group of his colleagues in Grades 4 - 6 through a series of workshops based around the resource. While this intervention supports the teachers to develop their interactive teaching, it also feeds back into the development of our resource.

## Conclusion

Both projects focus on elements of teacher education, one within a UK context, the other in a sub-Saharan African context. The projects are not just linked through a focus on teacher education, but also through the use and free exchange of OER. While the contexts are very different, many materials are easily adapted, demonstrating the value and mutual benefit of sharing resources in this way.

Another important outcome of both projects, is that use of resources (and associated technologies) do need to be placed firmly within a pedagogical framework to achieve the desired educational outcomes. It has been established that educational outcomes can rarely be achieved through particular resources or technologies alone.

Though ORBIT and OER4Schools, we are collaborating with a significant number of partner across all sectors of education: The projects focus on primary and secondary education (and thus also directly involve teachers), as well as on higher education (where university students and teacher educators are involved), allowing us to explore the full life cycle for the OER that we make available. We anticipate the project to be of lasting value to the teacher education community world-wide.

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# **Peer-to-peer Learning in Open Education: The Open KU - KUREKA Project at Korea University**

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## **Abstract**

This paper explores how peer-to-peer learning is applied to an open education project, Open KU, at Korea University located in South Korea. As the open education movement evolves, the user/learner engagement has become a burgeoning concept influencing open education activities encompassing the acquisition, distribution, and utilization of contents. Relevant examples of user participatory projects are OpenStudy and P2PU.

In order to reflect this paradigm shift in open education, Korea University has launched Open KU with the mission of becoming a venue for sharing knowledge and educational contents, in winter, 2011. Open KU is an evolved form of the Korea University OCW launched in 2008. Open KU serves as a home to Korea University produced lectures (OCWs), open educational resources (OERs), and KUREKA (coined from Korea University + eureka). Open KU encompasses all types of producers including both faculty and students, and educational resources such as recorded off-line lectures and related documents, mini-lectures, special seminars, etc.

KUREKA—a peer-to-peer learning project—was initiated under the recognition that students are also knowledge generators. Peer learning has been shown to stimulate the motivation to learn and provide low anxiety interaction. In this light, KUREKA was designed to consist of three components—mini courses on both academic and non-academic subjects, learning strategies videos, and contents generated through international collaborative projects. KUREKA enables students to upload and study using contents their peers have generated and provides this service on web, mobile, and PC platforms.

Although Open KU is nascent, three results are expected to be drawn as the project proceeds. First, KUREKA is expected to impact students' learning since students reconstruct their knowledge in order to share it with others. From the Open KU perspective, KUREKA is anticipated to activate open education in general by engaging students. Contents provided through the Open KU website can be constantly updated, generate interest among new users, and encourage proactive participation among faculty and students. As KUREKA grows, it is likely to naturally create a culture of sharing and a sense of community. Open education is not about teachers vs. learners, producers vs. receivers, but about participation, providing resources, and complementing one another to provide a holistic learning experience for everyone.

## **Keywords**

Peer-to-peer learning, open education, OpenCourseWare, OCW, Korea University, Open KU

## **Introduction**

As the first decade of open education has passed, an emerging trend has been the diversification of the utilization of open educational contents. Since 2011, Stanford University has opened its off-line lectures online with unlimited access which in turn became Coursera project with participation of Stanford University, University of Michigan, and University of California, Berkely. At around the same time, MIT launched the MITx project which issues certificates to qualified students who have completed certain MIT OCW courses. Also, an interesting two-year project with the goal of assessing learning by using open

educational contents, OERtest, was launched in October 2010. Another trend regarding the utilization of open educational contents are projects supporting the use of open educational contents such as Peer-to-Peer University (P2PU) and OpenStudy. Common features of these projects are the focus on users' participation and supporting a somewhat loose form of peer-to-peer learning.

Peer-to-peer learning is not a new learning method. Well-known peer-to-peer learning models such as peer tutoring and cooperative learning have been effectively applied to classrooms in primary to higher education. The benefits of peer learning have been examined not only in off-line face-to-face forms but also in online and long distance environments. Although the effectiveness of online peer-to-peer learning has not been proven to be conclusive, the Internet and open education can be used to facilitate and enhance peer-to-peer learning. The Internet is a powerful tool for engagement and collaboration which transcends time and space. Open educational contents are free learning recourses students can utilize for collaborative study. The same students need not be mere contents consumers but can also become contents producers and while doing so, they can transfer their knowledge to teaching.

To optimize the full potential of open education by utilizing peer-to-peer learning, Korea University, located in South Korea, launched KUREKA under the Korea University's open education program, Open KU. KUREKA is coined from *Korea University* and *eureka* and is meant to embody the exhilaration felt when one discovers knowledge through studying open educational contents at Open KU. KUREKA is a student participatory project which is comprised of content production, peer evaluation, collaborative translation, and asynchronous interaction. Students learn while producing educational contents and evaluating one another. They can also collaborate in the translation of Korean KUREKA and other Open KU contents into multi-languages and improve their language skills. These activities are complemented by asynchronous interaction using the bulletin board, the request board for new educational contents, and external social network services like Facebook and Twitter. Since KUREKA is in the making, the outcomes have yet to be assessed. However, the expected outcomes can help predict the positive future of the project.

### **Peer-to-peer learning in open education**

The effectiveness of peer-to-peer learning has been supported through numerous studies which have found that learners gain in academic achievement, acquire transferable social and communication skills, and engage in affective punctuation (Topping, 2007). These positive outcomes can be obtained by explicit and implicit activities during peer-to-peer learning such as interaction, cognitive challenges and conflict, scaffolding and error management, communication, and affective comfort (ibid, 2007). However, peer-to-peer learning needs to be semi-controlled in order to produce these positive impacts. To foster an optimal learning environment, peer learning needs to be designed intricately according to learning objectives and quality must be assured. Variables such as the size of the gap between the helper and the helped, the organizational structure of learning interaction, and the size of a group can result in different outcomes.

As technology and online environments have developed, research on peer-to-peer learning have become interested in online peer-to-peer learning. Yang (2006) investigated virtual learning communities focusing on peer-to-peer learning activities. He suggested two factors to make virtual learning communities effective – 1) contents; and 2) collaboration. It is important to provide high quality contents and encourage learners to use and contribute new contents. Additionally, learners' collaboration for managing, enriching, and accumulating knowledge is a critical factor for a virtual community to bring out positive outcomes. Yang added that facilitating interaction among collaborators in terms of resource discovery, access, sharing, group communication, and discussion is a key to facilitate meaningful collaboration.

P2PU is a representative example of when online peer-to-peer learning merges with an open education environment. P2PU allows anyone to open a course and anyone to participate in learning through various sources including OERs. Generally, P2PU did not specify and set a limit on target learning groups but rather chose a loose form of organization. Hence, the size of a group engaged in P2PU is literally unlimited and so is the size of a course. Peers guide peers and learn together through interaction and collaboration mainly through asynchronous bulletin boards and other open source synchronous collaboration tools like EtherPad and Elluminate. Thus, P2PU guides explicit interaction and collaboration using online tools and induces implicit cognitive challenges and utilizes a correction process. The effectiveness of P2PU has not yet been assessed but according to testimonies of participants, it seems to be bringing about positive outcomes including academic achievement in certain domains and providing a better learning experience. Claro (2011) who attended ‘Introduction to CSCL (Computer-Supported Collaborative Learning)’ has testified that P2PU is a type of egalitarian peer learning and assists the dissemination of knowledge.

KUREKA is also a form of online peer-to-peer learning but diverges from P2PU in several ways. In the subsequent section, we will delineate Korea University’s Open KU and KUREKA, focusing on the adopted peer-to-peer learning design and expected outcomes.

### **Open KU and KUREKA**

Open KU is an evolved form of Korea University OpenCourseWare (KUOCW). Since KUOCW encompasses only conventional courses created by faculty members, it is unable to maximize the full potential of open education. Thus, Korea University decided to extend the boundaries of producers and the format of contents. Not only faculty but also students can produce contents and share knowledge if the contents meet certain quality assurance criteria. Conventional lectures as well as all types of contents produced at Korea University such as seminars and mini-lectures can be included in Open KU. Ultimately, Open KU aims to be a repository of all knowledge contents at Korea University. However, it is not meant to be a mere archive. It aspires to be a learning management system to some extent. Thus, tools to help learners manage their learning, collaborate, and evaluate have been incorporated. And a reward system has been added to boost learners’ motivation.

Figure 1. Open KU website main page



KUREKA refers to students' content generation and learning activities in Open KU. From the peer-to-peer learning point of view, it is a loose form of collaborative peer learning. Theoretically, it targets all potential learners in Korea and other nations but specifically targets Korea University students and student clubs. KUREKA's objectives are learning by sharing knowledge, producing learning contents, and peer collaboration. As KUREKA develops, constant monitoring of interaction and participation will ensure an optimal learning environment.

Three major activities are designed to support peer-to-peer learning in KUREKA – 1) contents generation, 2) interaction and peer review, and 3) mutual translation. In KUREKA, any individual student or student club in Korea University can generate academic and non-academic knowledge contents. These contents are mainly in the form of a mini-lecture, which is a course consisting of a 10 to 15 minute short lecture video. In addition to the mini-lectures, students who have outstanding academic records are invited to share their learning strategies through video interviews.

How generating knowledge contents enhances academic achievement has not systematically been evaluated. However, Brandt and Hillgren (2003) found that the process of making videos is a collaborative learning process in itself and includes several steps. A group can reflect on how the knowledge is best carried out, colleagues can reflect in the process of generating videos, and the completed work can stimulate others to create knowledge based videos. Both collaboration and generation can bring a positive effect on learning. As Cortese (2005) states, teaching implies reflecting. While planning to teach, the information and knowledge the person has can be integrated in the presentation of knowledge. In other words, teaching refers to knowledge transfer whereas contents creation can serve as a valid teaching activity for the general audience.

Since KUREKA was initiated in 2011, 6 courses and 30 learning strategies videos have been uploaded (Table 1). All 10 courses were created by students' clubs. Each club utilized collaboration among its members to effectively deliver the club's specific knowledge. Unlike these courses, the learning strategies videos were made by each individual student. Students who have been awarded merit-based scholarships in different academic fields videotaped their

strategies. These videos are currently managed at the Korea University Center for Teaching and Learning website. The 500 to 1,000 hits for each video show how popular these videos are.

Table 1. List of KUREKA contents

Course Title	Author	Num of lectures
Easy and exciting dancing	Korea University Dance Team	4
Become a specialist of marketing competitions	Korea University Dream Oriented Society	3
For acoustic guitar newbies - catching up with “10cm”	Geurutoegi	6
Stock investment can’t be easier!	Real Investment Society of Korea	6
To become a DSLR user	Photo Journalists	3
Taekwondo for everyone	Taekwondo Club	5
Learning strategies	30 students	30

The second main peer-to-peer activity in KUREKA is interaction and review. The Open KU website provides various tools for these means. Students can rate, comment, and recommend through bulletin boards and social networking functions. Especially, students can request specific knowledge from peers and know-how about topics they are interested in. Proactive students who share their knowledge are acknowledged and rewarded. Students can earn points and get rewarded badges when a certain number of points have been accumulated. The most active participants are recognized on the website’s main page.

KUREKA also includes mutual collaborative multi-language translation. The Open KU website has incorporated a wiki-type mutual translation system supporting all languages. The system supports a minimum level of participation so that students can easily participate. Students can translate from one sentence to a full course and other peers can review, comment, and revise the translations. Currently, there are two projects that are in progress. One is an international collaborative initiative with Japanese students. A selected number of students from Meiji University in Japan and Korea University translate a course and mutually review to ensure accurate translation. The other source of translation is international exchange students at Korea University. Foreign students can translate Korean lectures to their diverse array of languages. In the short term, foreign students are afforded a meaningful way to improve their Korean proficiency while simultaneously providing their services to make KU contents available to non-Korean and non-English speaking audiences.

Since KUREKA is nascent, it is difficult to anticipate results. However, some outcomes can be expected. For participating students, it is expected that they can gain through acquiring knowledge, constructing knowledge, and improving communication skills. Implicitly, they naturally become immersed in a culture of sharing. To service providers, by engaging students and adopting a peer-to-peer learning scheme, active participation can be encouraged and more contents can be archived.

The future of KUREKA will be constructed with participants. Through close and continuous evaluation, KUREKA and the Open KU platform will be constantly upgraded. The future also depends on the development of online collaboration and social networking tools. New technologies enhancing peer-to-peer learning activities will be readily applied. To conclude, KUREKA will move towards helping learners optimize the use of open educational contents provided in Open KU and generating knowledge contents.

## Conclusions

Open learning is evolving. Starting from contents generation to licensing, contents gathering and disseminating, and certifying learners who have completed courses and utilized existing contents, open education is continuously expanding and changing forms. Korea University Open KU and KUREKA can be representative of an innovative endeavor. KUREKA is significant in the sense that it creatively applies peer-to-peer learning to open education. Although KUREKA has yet to reach its full potential, it will, at the very least, be the nexus of online, open, and peer learning at Korea University.

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## **Promotion of OER development in Indian Universities**

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### **Abstract**

Indian Universities have, in recent years, started loading content on the web but usually in formats that are inaccessible to the general public. The option of them being in Open Educational resources format have hardly been explored by any University. This, though the Ministry of Human resource Development - education Ministry has been stressing the importance of the use of IT in education and of creating content that is in the OER format. Content that is uploaded as PDF or as uneditable formats form the bulk of educational content. Merely providing access to content does not make it OER - understanding licenses with regard to educational content has to be made a priority. Distrust of formats that allow open edit, adaption and adoption continues to be all pervasive in the country.

The author of this paper will describe her experiences of developing OER, of conducting over twenty training workshops, and in guiding teachers to develop OER.

### **Keywords**

OER, Open Education Resources, Wikieducator, India,

India is a country with a population of over 1.2 billion, and more importantly 50 per cent of us below the age of 25 years and 31 percent below 14 years of age. According to National Census Report 2011, overall literacy in India is 75 % while the world average is 84%. These numbers reflect the mind-boggling task the Government of India has to educate such large masses.

There is also a wide gender disparity in the literacy rate in India: effective literacy rates (age 7 and above) in 2011 were 82.14% for men and 65.46% for women. Note here that Literacy has been defined as per UNESCO standards as the "ability to identify, understand, interpret, create, communicate, compute and use printed and written materials associated with varying contexts". It does not mean that these people have been through the formal education system. When it comes to schooling and University education the numbers drop very sharply. Quoting from Wikipedia, 'Only 15% of Indian students reach high school, and just 7%, of the 15% who make it to high school, graduate. As of 2008, India's post-secondary institutions offer only enough seats for 7% of India's college-age population, 25% of teaching positions nationwide are vacant, and 57% of college professors lack either a master's or PhD degree.'

India hence continues to face stern challenges in the field of education. As of 2011, there are 545 Universities in India of 41 are Central Universities, 261 State Universities, 94 Deemed Universities and 94 Private Universities. Besides we have 1522 degree-granting engineering colleges with an annual student intake of 582,000, plus 1,244 polytechnics with an annual intake of 265,000. And most importantly these institutions also face shortage of faculty leading to concerns over the quality of education.

This data has been presented to show how stupendous a task is faced by the Government of India in the arena of Education. Since face-to-face teaching of such large numbers would be impossible and also because often people choose to study while they work, distance education has become a viable option. From the traditional 'open education' where course materials and assignments were posted to the students, we have to gradually shift to a paradigm where all materials are placed on the web – this may not be feasible immediately due to poor internet use penetration through the country, particularly in remote and rural belts.



At school level, National Institute of Open Schooling (NIOS) provides opportunities for continuing education to those who missed completing school education. 14 lakh students are enrolled at the secondary and higher secondary level through open and distance learning. At higher education level, Indira Gandhi National Open University (IGNOU) plays a prominent role and it co-ordinates distance learning in the country. IGNOU has a cumulative enrolment of about 1,500,000 serviced through 53 regional centres and 1,400 study centres with 25,000 counselors.

### **NMEICT**

Recognizing the stupendous task that the Government of India faces, the Ministry of Human Resources and Development set up a 'National Commission on Education through Information and Communication Technology'. Quoting from the Government document: The National Mission on Education through Information and Communication Technology (ICT) has been envisaged as a 'Centrally Sponsored Scheme to leverage the potential of ICT, in teaching and learning process for the benefit of all the learners in Higher Education Institutions in any time any where mode'. This is expected to be a major intervention in enhancing the Gross Enrolment Ratio (GER) in Higher Education by 5 percentage points during the XI Five Year Plan period. An amount of INR 4612 crore (about 940 million USD) has been allocated by the Planning Commission during the 11th Five Year Plan for the National Mission on Education through ICT. The plan period end 2012.

Among the six objectives defined for the mega project, the sixth is of direct relevance to us here: making available of e-knowledge contents, free of cost to Indians. Going deeper into the document shows that while it mentions use of 'Wikipedia type of collaborative platform' it has not explicitly said under what kind of licensing the materials will be developed. The document further says it would 'promote open source culture and provide platform for sharing of ideas, techniques and pooling of knowledge resources' – again it shows that no clear understanding exists when it comes to educational content since it can be only software that can be 'open source' and porting that understanding to content without clearly defining it, is being attempted.

The NMEICT conducted so many meetings, had much discussion that were all very transparent with minutes available on the web almost immediately, but through all this one finds no meaningful discussion on content licensing, or any decision on the matter had been taken.

As I understand the situation, the education administrators in India are not willing to explicitly state and use the 'Creative Commons' or have a poor understanding of it!

### **NPTEL**

'National Programme on Technology Enhanced Learning' of the prestigious IIT's, provides e-learning through online Web and Video courses in Engineering, Science and humanities streams. The mission of NPTEL is to enhance the quality of Engineering education in the country by providing **free online courseware**. All the really excellent materials created under NPTEL, which the IIT's are rightly very proud of, are video recordings of classroom lectures, and their text in downloadable pdf files. More importantly 'no kind of license' is mentioned on the website!

On probing further, the FAQ on the site of NPTEL, has a section on 'Who owns the copyrights of the contents of NPTEL?'

The answer provided makes it very clear: *The copyrights are owned jointly by the MHRD, IITs/IISc and the faculty. MHRD has encouraged faculty to convert their electronic content to textbooks in various engineering and science subjects (which will not affect what is freely available). The rest of the issues are being studied carefully at present. Barring a few courses, the rest of the materials are likely to be distributed under a Creative Commons License in the future.*

The other major contributor to the NMEICT is the **Sakshat** project coordinated by IGNOU. A lot of content has been created under this platform but again ‘no licensing’ is available on the website.

Some materials created under the NMEICT platform – say ‘Spoken Tutorials’ and ‘Talk to the Teacher’ are licensed under Creative Commons Attribution Non Commercial 2.5 India. It is my belief that the objectives of the MHRD’s mega project can only be met by OER, but it is interesting that no decision to that effect has been taken. Clear-cut licensing policy has to be in place and the institutions that are part of the mega project should be given clear guidelines. We need to promote reuse and repurposing with hindrances of any kind.

### **Institutions providing Open Education**

Though we have 13 State Open Universities and 119 institutions of correspondence courses in conventional universities, none of these institutions, bar IGNOU under the Shakshat programme, provide even free access to educational materials.

When the situation is such, I would think it is alarming that a country that needs proliferation of education across the country at such rapid rates does not as a policy adopt ‘Open Educational Resources’.

### **OER Efforts**

The initiative by the Open Education Foundation to set up the ‘Open Educational Resource Inter-University Network’ or OERu is a great effort where 13 Universities across the globe have committed to creating and sharing OER resources and cross recognizing each others courses for credits towards a degree. Why I mention this, is because an Indian University is also a part of this consortium – yet this University to date has not put up any content in the ‘open’ domain. I think the word ‘Open’ that we use for universities of ‘distance learning’ has made many, atleast in India, believe that any content they are providing through the web are ‘open’ content. Most of these sites do not even provide ‘open access’.

Under such a scenario, the Wikieducator, because of its ‘wiki’ like editing has been adopted by several faculty across educational institutions even if not by the institution as a unit. The face-2-face as well as the Online Learning 4 Content workshops conducted by the Wikieducator community has seen participation of over 400 people from the academia in India. Of these, about a third continue to contribute and upload content on the wikieducator. Though Indians rank high in the number of Internet users as well as in participation in Wikieducator based content development, these are individual efforts – no institutional systems are in place to create materials in a concerted manner keeping a particular target or aim. Similarly Moodle as a platform is very popular among individual users or small groups but the educational system will only benefit if work is carried out in an organized manner in a system through involvement of educational administrators.

Recently Mumbai University has initiated a Pilot project on creation of OER – in the area of Economics and Soft Skills, through support from the Commonwealth of Learning and Commonwealth Educational Media for Asia. In this, the content is being uploaded on the Wikiedicator, which in turn is embedded in Moodle. The facilities of the Moodle for quizzes, assignments etc is being utilized. It is hoped that with the successful completion of this Pilot

Project, Mumbai University will take the project forward and will upload OER on a large scale, covering all its undergraduate courses, particularly those related to their Institute of Distance and Open Learning.

The University of Delhi under the banner of Institute of Lifelong Learning has over the last three years created much content for the undergraduate courses of the University – recently it has decided to release this content under an open license – I hope that within a month the materials will be published on the DU site as OER.

### **OER workshops**

I have been a member of the wikieducator community since August 2006, but it was only in 2008 October that I conducted the first Learning for Content workshop for teaching wiki skills and introducing participants to the concept of OER. The workshop participants were faculty from various colleges of the University of Delhi. That was the first – over the years my colleagues from my college and I have conducted over twenty such workshops, many of them funded by COL, within Delhi and some neighbouring states.

In general, the participants, who were mainly faculty members in various colleges, were very interested in learning wiki skills – we were teaching to participants who were computer-literate but were not computer scientists. When it came to discussions of the philosophy of the OER, Creative Commons – there was much hesitation, doubts in adopting them. Having been so used to the copyright regime for so long (many of them had also authored school and college text books), they were very skeptical of any open regime. Also, having been taught competitiveness throughout their lives, suddenly thinking of collaborative, collective working was a paradigm difficult to handle. Though they used wiki profusely, they were not willing to trust it – very few could actually think of editing wiki pages.

When it came to Creative Commons – they were more comfortable using an attribution, ND, NC license rather than open up!

Several workshops later, where the target were mainly teachers, I realized that despite many teachers willing to contribute OER, it was important to get the educational administrators in the loop. Individual teachers would contribute, but to result in any meaningful efforts, it needed administrative/academic decisions at the institutional levels.

The other reason I am mentioning, but have no proof for the veracity of the statement – teachers who authored books were paid honorarium and they got individual credit! The philosophy of OER overturns this approach totally – how and why should anyone create materials and not get paid! Also, from writing for the print media switching to the IT medium was also not easy!

### **Conclusion**

Thus, though it well recognized that India needs proliferation of distance learning modes through the country to make any impact on ‘increasing the statistics of education’ in the country, and NMEICT has been designed with this in mind, it is equally important to have a clear understanding of the license issues involved. We have yet to go a long way in this. Creative Commons Licenses that help to share knowledge and creativity can provide the means of maximizing digital creativity, sharing and innovation through the country. Appreciation of ‘open licenses’ that allow reuse, repurposing and adoption on a large scale is the only option to the Government to bring down costs and effectively reach out to the large numbers involved.

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### **License and Citation**

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# **PublishOER: a benefits-led approach to embedding published content in OER**

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## **Abstract**

Teachers and storytellers want to use a variety of high quality sources when developing learning resources, creatively mashing-up texts, images and other recordings into new works in order to enthuse and educate learners. It is ideal to cite the most authoritative sources, such as textbooks, journals and websites, and possibly embed text and images copied from those places. But academics face a complex legal environment where a wide variety of licence terms cover the use of published and orphaned works in ways that are not discussed in otherwise useful guidelines such as the British Academy and the Publishers Association (2008).

Where small amounts of third-party published or internet materials are embedded in digital learning resources, they are often properly attributed and licensed, however the legal situation becomes compromised when mash-ups of materials from different sources, sometimes annotated or otherwise modified, are secondarily recorded or made digitally available for students to copy/download, and potentially forward to others.

While the ‘open textbook’ movement may ultimately simplify this complex area (Flatworld Knowledge, 2012; Saylor Foundation, 2012; Creative Commons, 2012), there is a legacy of highly influential authoritative published works still locked into traditional business models and complex licensing. In health we also need to consider the rights of people appearing in learning resources before we make them digitally available or open (Hardy, Williams and Quentin-Baxter, 2010).

This paper reviews the current state of play and outlines an approach to augmenting open educational resources (OER) (OECD, 2007) with high quality published content by investigating new business models for embedding published works and social media in learning resources. PublishOER (MEDEV, 2012) is a current work-in-progress and a partnership of organisations including Elsevier, JISC Collections, Rightscom (with links to all publishers) and education providers, particularly the Royal Veterinary College, London (RVC).

## **Keywords**

Open educational resources, publishing, open publishing, published works, benefits models, business models, licence

## **Introduction and Context**

Institutions wishing to enhance the student learning experience by ensuring widespread access to digital copies of course documentation/presentations and recordings of teaching episodes via VLEs (and/or preloading portable electronic devices) as part of their ‘offer’ to students (Thompson and Bekhradnia, 2011) are concerned about potential breaches of third party

copyright and data protection consent processes. At the same time they often overlook a need to actively protect their own investment in learning resources developed by their own academics. Ideally all works should carry an ownership statement identifying ©year, owner, author (and contact details or URL if available), attribution to any included (third party) works from elsewhere, a statement on any ethical clearance or consent, and a disclaimer. They should also carry details of any licence or state ‘all rights reserved’ for clarity. Organisations should have an active ‘notice and take down’ policy. When files are digitally available and can be copied and distributed onwards we have argued that they are safer licensed with open Creative Commons (CC) licenses (2012) than nothing at all, whether an ‘open’ strategy is officially in place in the organisation or not (MEDEV, 2010).

CC licensed learning resources may have some embedded sources which are explicitly marked ‘all rights reserved’ and ‘used with permission’ (where permission has been granted), meaning that a re-user can repurpose the bulk of the file but may need to seek permission again for the rights-reserved content.

The International Association of Scientific, Technical & Medical Publishers (STM) and the Professional Scholarly & Publishing division of the Association of American Publishers (PSP) believe it is mutually beneficial to “*set out some common principles with respect to the use of limited amounts of journal article content in other published academic works and for educational use, and to reduce legal uncertainty*” (STM and PSP, 2008: 1). They continue: “*scholarly articles often require the direct reproduction of illustrative material (such as figures, tables, structures) for the purposes of discussion or comparison with other data, and that the electronic version of an article needs to contain the same illustrative material in order to maintain the authenticity of the record in both print and digital form*” and that “*in the development of course-packs (including for distance education), whether in print or electronic form, universities often wish to use similar quotations or limited excerpts*” (STM and PSP, 2008: 1-2).

They recommended that for “*the use of small portions of journal articles*” ... “*scholars (or their institutions with respect to course-packs) may (without obtaining explicit permission from publishers)*” use “*a maximum of two figures (including tables) from a journal article or five figures per journal volume*” and/or a “*single text extracts of less than 100 words or series of text extracts totalling less than 300 words for quotation*” ... “*in all media and in future editions*” (STM and PSP, 2008: 2).

Although textbooks are not explicitly included it sounds extremely helpful until you consider the conditions: “*The purpose of the use is scholarly comment or non-commercial research or educational use; certain complex illustrations such as anatomical drawings; cartoons; maps; poetry; works of art; or photographs, will still require normal permissions requests of publishers (or other copyright holder)*” ... “*full credit should be given to the author(s) and publisher(s)*” ... “*and the quotation or excerpt must never be modified.*” (STM and PSP, 2008: 2). Debate continues as to what constitutes ‘non-commercial’.

In the UK the Joint Information Systems Committee (JISC) Collections (2012) and the Copyright Licensing Agency (2012) have successfully negotiated access to licensed works for use in teaching and research. However these licence terms also usually require that staff and students undertake to *not* openly share results if they contain embedded third party content. Both CASPER (JISC Collections, 2010a), as part of the RePRODUCE programme (JISC Collections, 2010b), and UKOER programme phases 1 & 2 (JISC, 2011) highlighted ongoing difficulties for teachers openly sharing resources containing (legitimately embedded) third party copyright works because of the terms of the licence(s). Seeking permission on a

case-by-case basis is extremely time-consuming and provides publishers with minimal feedback on how their materials are subsequently used. Issues included:

- Openly or digitally sharing licensed works arising from existing access/permissions agreements, ensuring adequate attribution and providing feedback to copyright owners;
- The potential for copying significant quantities of content from texts or journals and the overall impact on subsequent user behaviour;
- Modifying existing works (e.g. combining elements, annotating or labelling, animating, presenting/ recording/capturing, social media reviews, etc.) resulting in the creation of new copyright works;
- Ensuring authors and publishers receive fair compensation (costing, pricing, indirect payment) based on new ways to pay, assuming that disruptive solutions (Anderson, 2008) exist in this sector.

Most publishers are already reconsidering their policies, technologies and business processes (e.g. Pearson Higher Education, 2012 and their Penguin Group, 2012; Flood, 2011) in the wake of widespread discontent with traditional publishing models (Monbiot, 2011) and alongside the launch of services such as Apple's iBook (Apple Computer, 2012). At the same time web 2.0 social media has created a parallel publishing universe where people 'live out loud' and crowd opinion is more important than the views of a commissioning editor or peer reviewer (Keitzman et al, 2011). Access to journal literature has been particularly heavily criticised (Business, Innovation and Skills, 2011; Hargreaves, 2011) because of the lead-time to print, a lack of perceived transparency and premiums placed on buying back the results of primarily publicly-funded research (in a monopoly market). While some publishers are diversifying into, for example, service provision for works of any quality (taking a straight fee or % profit from authors), others are considering how best to capitalise on selling their high quality content online (more creatively than just posting a pdf of the print version) while avoiding making content available for widespread piracy.

PublishOER is a collaboration involving forward-thinking publishers such as Elsevier (2012) exploring licence terms for on-line access to use, mash-up and re-publish copyrighted content in ways that add value for all parties. Rightscom (2012) has undertaken influential research on how to create an automated 21<sup>st</sup> Century rights environment for digital resources, and is testing potential publishing scenarios. Case studies involving staff and students from two veterinary schools (led by the RVC) (Royal Veterinary College, 2012) are exploring how permission-seeking processes can be accelerated and enhanced to provide publishers with information on how copyright material is being used in practice, and how publication of mashed-up content wrapped in social media can be linked from the original sources to illustrate the business scenarios below. JISC Collections (2012) will identify the potential for new licensing terms allowing for third party materials to be embedded in digitally available and open resources, and update the CASPER online guidance (JISC Collections 2010a).

## **Method**

Rightscom is in the process of surveying stakeholders in the context of current academic publishing and following changes in UK further and higher education (Browne, 2010). Realistic 'straw man' scenarios were developed to test with major publishers to discover which, if any, were on (or could potentially be on) their roadmap, for example:

- Some third-party materials are licensed by their publisher (e.g. all rights reserved) for inclusion in OERs that are rated by users. Rated content raises awareness and reputation of the linked source texts; original books sales increase.
- An academic reproduces forty attributed images from a popular text (under licence *on condition* that they are modified) into PowerPoint, annotating/animating them, and

presenting them to students as a recorded lecture. Both the recording and the PowerPoint are made available as OER. The publisher links to the derivatives from the text in order to enhance the book (for subscribing individuals/organisations).

- Sections or chapters of popular texts are made available on the publisher's website, iTunesU, iBooks or NewsStand, in appropriate formats (video, audio, epub, pdf, app, etc.) at a fraction of the physical book price. OERs link to sections that learners can download for pence in the same way as buying apps, or download the whole book.
- OER mashup of mixed origin (perhaps licensed under CC Attribution Only) showcased on publishers' websites generates enough 'eyeballs' through ratings and comments to be attractive to advertisers. Publishers make remixed content available for free (unless they pay to remove the advertising) or charge third party advertisers differentially for popular options.
- Publishers' API access to their journal and text content is used to dynamically link from reading lists and VLEs with free low-quality content, or low cost high-quality content.

General and specific questions accompany each of the scenarios exploring what, if any, conditions might be acceptable to publishers, academics, librarians, students, etc. Publisher questions include:

- Would publishers be prepared to licence content to be embedded in OER (no; all rights reserved; another type of licence; CC; etc.)?
- If yes, how much content, and what type and scale might they be prepared to licence?
- Would they be inhibited by their own third-party rights, or any other issues?
- Would they anticipate revenue generation with this scenario, and what would be important factors in deciding?
- Would publishers consider signing-up to a simple, national licence or agreement for embedding works in OER?

Meanwhile activity on the case studies in veterinary medicine began with focus groups with students and staff to seek equivalent views about what they wanted and what models they might be prepared to pay for. Veterinary medicine was chosen as a sufficiently discrete discipline in which current Elsevier content could be used to test the benefits-models and scenarios. WikiVet (2012), a veterinary education site with over 15,000 users (Brown, Quentin-Baxter and Belshaw, 2010) already makes use of CABI (2012) and Manson Publishing (2012) content, and will add published content from Elsevier.

Technical development includes porting content to online formats for multiple platforms and methods of viewing, such as mind maps and annotated lists and illustrative APIs. Social media will be applied to ported texts to facilitate comments and discussion, and enable re-users to link files that they have created representing copies or derivatives of the works. A permission-request tool is under development to help academics and students fast-track permission requests and decisions, storing request details with annual reminders. It will also house details of DOIs or where any derivative works can be found, in order to facilitate linking from parent works.

## **Results and Discussion**

PublishOER is a work-in-progress, however we can already see examples of the scenarios developing with the products from collaborating publishers. Challenges include securing results within the timescale (by October 2012), resource discovery, piracy and complexity. Ultimately systems need to be easy to use and understand. Awareness has been raised with key stakeholders such as the Strategic Content Alliance (2012) and the Open Access



Scholarly Publishers Association (2012), and events such as Open Education Week (2012) is raising awareness of OER around the world.

This project has the potential to build the foundations for a new mixed economy incorporating published works in OER, ensuring learners and teachers benefit from a broader range of high-quality learning resources, and increased personal choice.

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# **Review and endorsement of OERs by graduate-recruiting employers in the HumBox repository: the educational case in HE Arts and Humanities subjects.**

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## **Abstract**

In the UK Higher Education context graduate-recruiting employer reviews can add reputational value to OERs, hence encouraging more open content publication of quality materials. Giving access to non-educational users to OER reviewing and endorsing activities can be a key component of a very much needed new agenda on OERs sustainability which needs to include showcasing of learning and teaching more firmly. This paper analyses the involvement of those employers in the review and endorsement of OERs in the area of Arts and Humanities in HE in the UK from the perspective of users of the HumBox repository. The rationale for engagement with employers in the context of an increasingly employability-focused curriculum is explored and different review and endorsement systems are compared. New ideas such as the transportability and commoditisation of reviews and the fossilisation of OERs are also discussed.

## **Keywords**

collaboration – OER review – OER endorsement – accreditation – relevance – openness – sustainability – employer – repositories – HumBox – employability – OER – OER showcasing – OER transportability – OER fossilisation – commoditisation of reviews

## **Introduction**

This paper is one of the outputs of the SCORE-funded project “Review and Endorsement of OERs by Graduate-Recruiting Employers” in the HumBox repository. The project concentrates on the area of sustainability of OERs by exploring engagement in OERs by employers who offer general recruiting schemes for graduates, i.e. without regard of the specific subject studied. The research questions revolve around the potential for these employers to review and endorse OERs’ in the HumBox, the JISC-funded UK repository for Arts and Humanities. The reviews and endorsement activities of employers concentrate on the employability value of learning activities published in the form of OERs. The aims of the project are to propose a feasible model for employer engagement in OERs and to add extra value to existing OERs, hence reinforcing our existing Communities of Practice and encouraging high-quality open content publication and re-use.

The 10 interviews that have been carried out with OERs authors/contributors form the primary basis of the qualitative research for this paper. The interviewees have all been reviewers previously or have had some of their resources reviewed, therefore, they are familiar with all the relevant concepts and with most of the practices discussed in the interviews.

Further research on employers’ perspectives in this area is being carried out at the time of the presentation of this paper. Its outcomes will be discussed in a forthcoming paper. Additionally, several collections of reviewed/endorsed HumBox OERs may be created in collaboration with employers. Finally, a pattern of good practice for this type of engagement resulting from the pilot experience run with employers will set a clear path for other UK and world OERs repositories

### **Employability and employer involvement in the curriculum**

The growing demand for employability from students and employers is being met by universities through different channels. As part of this drive, Higher Education Institutions have made great efforts to embed employability in the academic curriculum of all their degrees in response to that demand. The lists of graduates' attributes and skills are very detailed for each degree programme and an increasing number of courses require the explicit inclusion of employable skills that students are expected to acquire. However, respondents agreed that there are no effective mechanisms for dialogue and feedback on specific samples of learning and teaching between their authors and graduate-recruiting employers, particularly in non-vocational subjects such as Arts and Humanities. The first hypothesis of this study, hence, is that there is a need in the UK for dynamic, decentralised, case-based, multilateral and collaborative definitions of employability in Arts and Humanities.

This hypothesis was put to the test with participating academics in the course of the interviews. In some cases the question of what types of resources lend themselves to being reviewed on the basis of their employability value in Arts and Humanities arose. The researcher specified three main possibilities:

1. Resources incorporating learning activities or assessment on subject-specific academic content whose methodology contributes to the development of identifiable employable skills (for instance, a seminar activity or a presentation);
2. Resources focusing on the provision of subject-specific academic or cultural content that is also relevant for the acquisition of an identifiable employable skill (for instance, a video on intercultural communication);
3. Employability resources, designed to increase learners' awareness and self-reflection on their transferable skills (for instance, a student questionnaire about their learning experience and its relation to transferable skills or a handout on employability).

In general, the responses given by academics are a reflection of the tensions and the opportunities coexisting in a new scenario shaped by a perceived alignment of HE with the interests of industry and the new HE funding policies of the government. The question of instrumentalisation of universities, which for many should beware of becoming "training grounds for industry", appeared prominently in several cases in clear resonance with the opinions expressed in the SCREE report by a Careers Services Director (Lowden, Hall, Elliot and Lewin, 2011:22). However, for most of respondents the voice of employers should be heard in relation to curriculum-embedded employable competences in one way or another.

Some of the respondents indicated initially that employers may not be qualified to provide advice or express any judgement in relation to many of the learning resources that they may be presented with. Embedding skills acquisition in curricular content is a highly specialised professional task. For some other respondents this concern is easily overshadowed by the fact that the academic whose resource has been reviewed, or anyone else, can always rebate the views expressed by the employer. However, other respondents remained unconvinced about the effectiveness of this sort of interaction. Curricular learning activities seem to form part of a package of content, values and skills that cannot be unbundled without great danger of altering its educational substance.

This leads us to the question of defining the professional boundaries between the academic educator and the employer. One respondent identified what could be considered a lowest common denominator formula that would allow employers to incorporate their views in the OERs without assuming the role of the educationalist. The respondent suggested that "[employers] can review the resource in relation to their usefulness for the world of work, or how far the resource contains elements which relate to transferable skills".

All respondents were in agreement that the academic curriculum is an ideal scenario for the humanistic and non-utilitarian integration of life skills, a wide category which includes employable skills, into subject content. However, some also agreed that there are not sufficient exemplars of how to embed employable skills effectively in the curriculum in Arts and Humanities subjects. Another strand of opinion argues that the classic menu of essay, lecture, seminar and exam seems to be insufficient to deliver the skills that students need in order to become more skilled and responsible citizens in the global and interconnected 21<sup>st</sup> Century society. Meanwhile, many employers are currently in tune with the most advanced, inclusive and student-centred pedagogical thinking. For example, they defend that more team work skills and contextualised learning is desirable in HE.

*The contextualisation of subjects provides particular opportunities for skills development and reflection; team project work, case study analysis, assessment through presentation and research tasks are all established pedagogies that contribute to generic skills development whilst, in parallel, developing the mindset skills associated with the subject studied. (Wilson, 2012:32)*

It is clear that the synergies between some of the employers' suggestions about the curriculum and the work from educationalists who promote more meaningful and socio-constructive learning should be harnessed for the benefit of our students. It was agreed by a vast majority of respondents that employer endorsement can act as an incentive to review their own teaching methodology for a variety of practitioners.

Two more questions remain to be discussed. Firstly, some fear, understandably, that some employers may have a bias against academic contents which question the current economic, social or political orders. Secondly, it would not be unthinkable to expect that employers' involvement would not be evenly distributed across all the academic subjects or topics. In both cases, the answer to these questions lies on promoting the involvement of a very diverse range of people and organisations. Students, charities, artists, public bodies and think-tanks should be all invited to social and educational spaces and given the opportunity to contribute with their views about learning and teaching in Higher Education in the same way as employers.

### **Endorsement, comments and review of resources within repositories**

Traditional peer-review mechanisms, which are seen by many as some form of uncomfortable baggage that OERs still carry from the academic production, are being contested and superseded by other forms of relevance and accreditation production such as users' comments, users' ratings and complex mechanisms such as the one operated by Slashdot. The most sophisticated scheme proposed at the time of the writing of this article is the Learning Registry, which aims to filter and process all the paradata available about each OER in order to provide it with sufficient informational scaffolding, helping users to judge their adequacy and suitability in relation to a specific educational situation. For the purpose of this paper, the acronym RAUs, from Benkley's expression Relevance and Accreditation Utterances (2006), will be used, when necessary hereafter.

The two repositories that have to be considered in order to contextualise the discussion around employers' reviews in the HumBox are MERLOT and Connexions. These two highly influential and globally respected repositories offer access to content contributors beyond the universities where they are based. They possess two contrasting relevance and accreditation production systems for their resources whose critical comparison illustrates the dilemmas faced by other repositories in the world.

MERLOT is an extremely open repository which allows anyone to open an account and showcase their work. Its overall social architecture seems extremely robust, with a clearly established hierarchy of users. MERLOT accepts comments from every user, but the comments box requires of users to provide key details about their user experience in relation to the resource they want to comment on. That way, users who read the comment can assess its relevance and reliability. Reviews in this repository can only be posted by MERLOT-trained reviewers and carried out in accordance with MERLOT guidelines and procedures. This system is highly consistent with a regulated paradigm of education, in which objectives, aims and methodology are subject to highly detailed prescriptions emanating from the subject-specialists tutor for the sake of auditing and transparency. MERLOT's approach to reviewing is an important part of the identity of the repository and fits very well with the academic ethos and the spirit of quality assurance mechanisms in education worldwide.

Connexions offers a different quality assurance approach to that of MERLOT. The article "Peer Review Anew: Three Principles and a Case Study in Postpublication Quality Assurance" (Kelty, Burrus and Baraniuk, 2008) presents the case for the "Lenses System", the reviewing and endorsement system of Connexions. As the authors summarise, the Lenses allow multiple contributors to highlight quality in each resource for different groups of users and for different contexts of use. The article defends the very post modern idea that OERs should never be considered a final product. Quality becomes, using Bauman's expression (Bauman, 2000), "liquid". Wiley and Gurrell (2009) also discuss the idea of quality assurance, suggesting in the same line of thinking, that assessing utility is more appropriate than assessing quality. They also introduce the idea that the assessment of the utility of the OER has to be done following active engagement with the resource as a user. This last point is not an issue in Connexions, as endorsement and reviewing by organisations, for instance, are perfectly possible in that repository.

### **Comments and collections in HumBox**

As opposed to MERLOT and Connexions, the HumBox presents itself as a community repository. It is aimed at Arts and Humanities in UK Higher Education community, although, interestingly, it has unrestricted membership, as it allows anyone in the world to create an account, upload content and write comments. The HumBox has attracted learning objects of variable granularities and highly diverse content.

The two main possible ways to communicate relevance or accreditation within the HumBox repository in relation to its repository content are the comments box facility and the collections facility. The former is extremely straightforward and displays comments at the bottom of the resource page. The latter allows users to put together different HumBox resources under a certain description and title. Collections appear in searches in the same way as resources, but they are represented by a folder icon. This mechanism is relatively similar to the Lenses system. In addition to this, a review of a resource could be created in the form of a resource itself and be linked to the reviewed resource internally, introducing a third category that has not been explored to date.

During pre-launch stages of the HumBox, a process of peer-reviewing by subject specialists took place. The reviews were carried out according to guidelines elaborated by the project team. They concentrated on the educational potential and value of the resources and on questions of usability, covering questions such as software needed to use the files. Unlike MERLOT, the HumBox project did not envisage a permanent system of reviewing. After the official launch of the HumBox in 2010 the number of reviews or comments decreased dramatically. Interestingly, the number of content creators, resources and hits continued to grow steadily and firmly after the prime-pumping funds attached to the project had been spent, making HumBox one of the success stories of UKOER.

The quality assurance formulae and solutions proposed by Connexions and HumBox are more in tune with the new economic, cultural and educational paradigms described by Benkley (2006) and by Wiley (2010) than those of MERLOT. Therefore the former may have greater chances of becoming the preferred option for repositories that choose to have any form of postpublication quality assurance than the latter.

### **Opening OERs review and endorsement to non-educational users**

The second set of hypothesis that this research wanted to test was whether the dialogue between academics and employers about case-based employability, a form of social collaboration of construction of knowledge,

- can be articulated around OERs,
- can be hosted in open educational spaces such as the HumBox repository,
- and can contribute to improve the sustainability of OERs .

The involvement of employers in education through OERs brings life to the latent contradiction between the educational, economic, cultural and political discourse on social collaboration for the construction of knowledge and the need to resolve the asymmetries in education by delivering more free quality content. These are two of the key ingredients of the discourses underpinning open education. Whereas the former provides the intellectual support for a multilateral contribution to content creation, which could include employers, the latter provokes a knee-jerk apprehension about profit-making organisations being involved in OERs. The question of how effectively and promptly the free access agenda has to be implemented heightens this dilemma.

Collaboration from non-charitable and non-educational organisations accelerates the process. Downes (2006) and Wiley and Gurrell (2009) integrate into their work on OER sustainability different models of OER projects according to the way they are funded. MIT OCW (2011) is offering corporate sponsors, members of the “Next Decade Alliance” a view on to the MIT OERs. These are aggregations of material relevant to their sponsor’s customers or employees. The idea of private businesses showing social responsibility and contributing to free access education by giving some of their time, expertise or money to OERs is certainly not alien to the OER movement. In the case of HumBox, the responses from the interviewees, plus the initial responses from employers, suggest that reviews, endorsement and comments by non resource users, not only employers, can play a role in improving sustainability. Although the employers would not provide any funds as part of this initiative, they would contribute with their time and expertise and, crucially, they could encourage institutions to release more content as part of their profile-building activities.

The interviewees were questioned about the right of employers and employer groups to write comments in the resource pages of the HumBox. The general sense is that as a matter of principle everybody is entitled to have a view on OERs and share it. For some respondents, though, the legitimacy to write comments stems from having actually used the resource either as teachers or as learners. For them, the intended function of the comment box facility in HumBox is to allow users to facilitate reusability. Comments are seen as an intrinsic part of the process of construction of the user-generated scaffolding around the resource which provides context of use. The reasoning behind this viewpoint is that as learning resources are to be used in learning and teaching, any experiential encounter with them worth retelling must be connected to the purpose that the resource was designed for. Otherwise, the person who writes the comment is not adding information to the resource that is relevant for other possible users.



One of the interviewees suggested that the HumBox should have a comments system similar to the one in MERLOT. The key principle of this system is that users who comment are required to give information about their experiential encounter with the resource. The MERLOT solution would certainly solve the objection to non-user reviews in a very pragmatic and elegant way.

However, the relative resistance to reviews written by users who have not used the resource for their learning or their teaching is not just a practical question that can be solved by improving the comments facilities of the repository. In our case, this discourse about reviewing is the tip of a theoretical iceberg that needs to be explored.

Looking at the work of Downes (2006) it can be argued that one of the reasons behind the exclusion of reviews from core OERs activities may be the increased centrality acquired by the concept of “reuse” in the OERs movement. In response to the concerns over sustainability at a global scale,

*what this means is that the functions of production and consumption need to be collapsed, that the distinction between producers and consumers need to be collapsed. The use of a learning resource, through adaptation and repurposing, becomes the production of another resource. Though there is a steady stream of new resources input into the network by volunteers, this represents, not the result of an OER sustainability project, but the beginning of it. (Downes, 2006:15)*

This argument may help to explain why Wiley’s 4 R’s (Reuse, Redistribute, Revise, as in adapting, and Remix) (Wiley, 2010) do not include the 5<sup>th</sup> R, “Review and endorsement”. The 4 R’s conception of OERs is extremely valid proposition in the global context that was envisaged in. It represents OERs in motion, not as objects to be contemplated and discussed. It also helps to categorise the different levels of access granted by the CC licences. However, this formulation of the idea of OERs production, which clearly emphasises the necessary dynamism of educational action, has to be slightly reshaped in our UK HE context at this time. Institutions want to improve curricular employability, want closer engagement with employers and need to reinforce their learning and teaching reputation in the new financial scenario. This is particularly relevant in the case of non-vocational subjects such as Arts and Humanities.

Review and endorsement activities by non-educational users have to be included into some kind of category of OER-related usage for them to become the subject of further discussion and study. A distinction between use of the resource and use of the repository needs to be introduced at this point. Although anyone accessing the resource through the repository is using both the resource and the repository, not everyone making use of the repository is making use of resources. Many of the functions performed in repositories by their users are not motivated by a desire to use the resource for teaching, learning or cultural enjoyment purposes. For instance, including a biography in one’s user profile or finding out whether one likes the learning materials of an academic working in the same field cannot be regarded as resource use, at least in the way suggested by some of the respondents. The same applies to the design and management of the architecture and the identity of the repository. Repository use is an extremely wide category. Reviews and endorsement by non-resource users are part of it.

### **Collaboration and interaction in the reviewing process**

Employers’ engagement with authors prior to the publication or even before the writing-up of the review needs to be looked at. This interaction can be the basis of one of the possible formats of collaborative production of reviews. It was raised in the interviews that an

employer may want to ask if the academic is happy for her resources to be reviewed. Also, they may want to share a draft of their review with the academic concerned in private. For many respondents these are very likely scenarios. Even those who defended that sharing content in a repository as open as HumBox involves accepting unannounced reviews recognised that employers may want to be courteous and cautious. This form of collaboration will be researched more in detail when the review and endorsement process is piloted with employers. One possible outcome is that due to the novelty of this practice, employers may want to play safe. In any case, as it can be seen in UKOER projects, the culture of sharing does only grow in parallel to the safe development of open practice, and this may be the case also in relation to reviewing and endorsement.

Another possibility to be explored in the near future is the collaboration between academics and employers in finding resources or even in writing reviews jointly. This last point was also discussed with the academics interviewed. Some form of partnership under which academics could collaborate with employers in the identification and review of resources was seen as good practice. Firstly, it would help employers to fill any expertise gaps that they may encounter and, secondly, it would provide employers with reassurance, as some of them may not feel comfortable in digital educational spaces.

One of the respondents presented one interesting objection to the collaboration in the process of reviewing when s/he argued that reviewers working for companies should be signing the reviews with their own names, rather than their employers'. This response shows that collaboration in writing reviews is a contentious issue in a "community" repository, using the distinction of Foote (Downes, 2006). In this type of spaces all individuals can have their voice heard without any kind of aggregation, filtering or syndication. It is difficult to imagine that the process of social and decentralised production of knowledge advanced by Benkley (2006) would work within the boundaries of a local and subject-based space driven by academics, no matter how inclusive it may be. Fortunately, the HumBox has demonstrated that retaining the spirit of a pleasant neighbourhood where individuals matter whilst being global in its appeal is a feasible proposition. The resources and the people participating in HumBox are interconnected to the rest of the digital world, though. Inevitably and desirably a lot of the discussion and scaffolding of those resources will happen outside the HumBox, as some of them make it to the "emergent" model spaces mentioned in Downes (2006).

### **Open Buildings in the Free Digital City Quarter**

One of the situations that most interviewees were confronted with was the possibility of employers posting their comments about HumBox OERs in other spaces, such as their own web pages. One of the examples given was employers creating a section within their corporate web dedicated to social responsibility and a subsection dedicated to engagement in HE. In this subsection they would write comments or reviews about the resources in HumBox and create links to the resources within the HumBox. In some other discussions with interviewees, the question of employers creating their own repositories was also raised.

These not so unlikely situations and the reactions of some of the respondents epitomise very well the challenges posed by the liquidity of our digital and post-modern world. The response given by one of the interviewees, who said that if employers were to publish their reviews and comments in their own webs they would "upset the balance", was unique in its formulation and nuances but not in its spirit. Respondents generally preferred educational matters to be discussed in educational spaces.

The "transportability" of reviews written and posted in HumBox, as opposed to reviews in employers' pages, also presents some interesting challenges. In the case of HumBox, once the reviewer has opted for posting the comment or has created the collection, the transportability

of the RAUs by users is technically not possible, as these are attached to the resource page. However, anyone re-publishing the resource, either inside or outside the HumBox, whether it is repurposed, updated, remixed or simply kept in its original version, can always cite the RAU made by the employer about any resource.

The question of whether the content of the text of the RAU can be reproduced legally by someone else is not clear, as at the moment, the Terms of the Licence of use in HumBox do not make any specific mention to the licence applicable to the content of the comments. The way MERLOT has approached this issue is to draw a detailed list of repository contents indicating a specific licence for each one (MERLOT, 2010). This may be an appropriate solution for HumBox and similar repositories in order to facilitate transportability of reviews. HumBox managers have confirmed that this question will be looked at in the next upgrade.

The proliferation of non-transportable text-based RAUs could become a disincentive for republishing, as the reputational added value of the review would stay with the version that first attracted the positive review. In turn, this would contribute to the “fossilisation” of the reviewed OER. However, it can be argued that if relatively critical reviews were to take off, modification of resources and republishing may also be encouraged. One positive effect of attaching positive reviews to the reviewed version strongly is that users who repurpose reviewed OERs would have an incentive to make clear the connection of their repurposed resource with the reviewed version.

The range of possibilities for location of text-based RAUs is immense. We have only mentioned a few in this paper. A detailed taxonomy of the different possibilities and their implications for the users of the repository and the users of the resources could well be the subject of a separate study. The dilemmas about the location of RAUs and their transportability are a representation, in a very small scale, of the current struggles of digital spaces to gain relevance and reputation and attract users.

### **Competition for reviews and their possible commoditisation**

There is a greater need to demonstrate to students and the public that employability is well embedded in Higher Education. In line with this, respondents were asked to express their views about the possibility of institutions seeking positive employers’ reviews on their learning and teaching for marketing and reputational purposes. They were also asked whether this could lead in the future to the commoditisation of reviews.

Interviewees recognised the competition for RAUs as a possible outcome of employer involvement in reviewing and endorsement activities, but there does not seem to be a set of well-defined discourses on this question. One possible reason for this, as it became clear in some interviews, is that it is difficult to express concern or disagreement about this particular form of reputation-seeking behaviour without opening-up the Pandora-Box of reputation-seeking through the whole field of Higher Education, particularly in a context of commercialisation of education. In any case, some of the qualms over the competition for RAUs apply to any sort of endorsement provided by anyone who has the trust and respect of the community, not only employers. Marketing activities around the quality of the learning and teaching would also have to be included in this discussion. Therefore, whilst competition for reviews is perceived as a negative development, there is an assumption that this would be a natural, yet distant, development in the case of employer endorsement and reviews in HumBox.

### **Conclusion**

The OERs movement is creating a parallel non-profit making sector of the economy which is transforming the production, distribution and access to knowledge in accordance to the new

socio-economic and cultural parameters introduced by the internet. These transformations will certainly empower individuals and bring great opportunities for human development. Interestingly, the strength of the OERs movement resides not only in its extremely appealing aims and the potential of social production, but in how institutional players and platforms have managed to adopt some of the very behaviours who have made their current profit-making competitors also strong.

OERs sharing culture is contributing to the transformation of the market-based production system, but the turning point of that change is still a long way ahead. Whether we like it or not, the growth of OERs is not happening in a cultural vacuum because we live in an open world. Furthermore, the access of new participants to the open content production networks cannot be staggered at leisure to make it coincide harmoniously with the expansion of the sharing cultural paradigm. The challenge for the Open Education Movement is to secure the progressive expansion of open content social production by repurposing some of our existing economic, cultural and political tools in parallel to the development of new ones. For the OERs movement to continue to make a difference in terms of human advancement “pricing” of outputs for the user is what should be kept out of the equation. Wiley’s (2009) pragmatism over OERs is the only way forward, as openness also means including other participants in the OERs movement (Martínez-Arboleda, A., 2011)

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# Supporting Communities of Teachers in producing and sharing OER

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## Abstract

User-generated Open Educational Resources represent an important opportunity for schools. Since 2005, our research team has been working towards the exploitation of this opportunity. During three consecutive European funded projects, we have co-designed and run online courses for teachers on the production of Open Educational Resources using Web 2.0 tools and environments for the production of Learning Objects. Online courses have involved around 800 teachers from Germany, Hungary, Ireland, Italy, Romania, Slovenia, Spain, Turkey.

The central idea of the three projects has been that educational content can be effectively designed, developed and shared directly by the community of teachers who will use them. This goal can be achieved provided that teachers are supported through specific training programs.

The main lessons learned during the projects are presented in this paper.

## Keywords

Open Education Resources, Teacher Training, OER repositories, Community of practice.

## Introduction

At the conclusion of the 2002 *Forum on the Impact of Open Courseware for Higher Education in Developing Countries*, organized by UNESCO, the participants expressed their wish to develop a universal educational resource available for the whole of humanity, to be referred to henceforth as Open Educational Resources (OER).

The idea was to promote an open provision of educational resources, enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes.

Since then, a movement of thought that considers it necessary to allow everyone free access to knowledge for educational purposes has developed. In 2007, following the publication of 3 important documents on this subject, the importance of OER has become central to the political agenda of many countries worldwide:

- Giving Knowledge for Free: The Emergence of Open Educational Resources (OECD, 2007)
- A Review of the Open Educational Resources (OER) Movement: Achievements, Challenges, and New Opportunities (Atkinson et al., 2007).
- Open Educational Practices and Resources: OLCOS Roadmap 2012 (Geser, 2007).

The three reports agree that the success of initiatives based on the Open Educational Resource concept is threatened by many factors; amongst them:

- lack of open practices of teaching and learning;
- technical difficulties in developing open digital resources;
- lack of experience in supporting communities of practice involved in the development of OER;
- scarcity of business models in OER

Following these publications, the Council of Europe has specifically mentioned the strategic importance of policies that promote the adoption and development of OER in the school system, and even the United Nations have highlighted the strategic value of OER.

OER that are produced directly by teachers represent an important opportunity for schools. In order to raise awareness of the potentials of OER amongst teachers, and encourage their adoption in educational practices, we have participated in 3 European-funded projects: Sloop - Sharing Learning Objects in an Open Perspective (2005-2007); Tenegen - Connect the TEachers to reach and teach the NEt GENeration (2008-2010); Sloop2desc - Sharing Learning Objects in an Open Perspective to develop European Skills and Competences (2009-2011).

The Sloop project launched the idea to have digital contents produced directly by a community of teachers. The original idea behind the project was that teachers can build Learning Objects whilst software specialists develop open software packages: each teacher can contribute to the development phase, as well as repurposing the Learning Objects to meet her/his specific needs. A similar approach was adopted in the Tenegen project, where the focus was on training teachers on the use of Web 2.0 tools, and the production of OER was part of the teacher-training programme. Finally, the collaborative creation of OER by a community of teachers has been further stressed and amplified by the intense use of Web 2.0 tools in the Sloop2desc project, which has also promoted - amongst teachers and academics - the knowledge of the new educational systems that are based on learning outcomes and competences.

After a short introduction of the projects, we summarise the main strengths and weaknesses identified during the projects, and conclude by presenting some recommendations for future similar initiatives.

### **Three OER European projects**

In this section, we shortly introduce the main objectives and results of the three projects Sloop, Tenegen and Sloop2desc.

The 2-year Sloop project ran from October 2005 till September 2007 and involved 10 partners from 5 countries (Italy, Ireland, Romania, Slovenia, Spain). It was promoted and coordinated by ITSOS Marie Curie, a high school in Italy with several years' experience in the e-learning field. The rationale behind the project was to transfer the philosophy of the Free/OpenSource Software movement to e-learning and distance education communities, specifically to promote collaborative sharing as well as the construction of knowledge and resources both in secondary schools (Italy) and higher education (Romania, Slovenia and Spain).

The objectives of the Sloop projects were to:

- Promote and facilitate the integration of face to face learning, work-based learning and e-learning in order to improve the quality and efficiency of the students' learning process;
- Customise learning paths by supporting them appropriately with multimedia learning objects;
- Facilitate the creation and the use of education tools (learning objects) which are free, re-usable and shared among teaching communities according to the free software philosophy.

The Learning Object model was very popular at that time, and the Sloop partners agreed that this model allow teachers to design both learning materials and learning experiences.

Accordingly, the Sloop project partners considered learning resources mainly in a “packaged form”, as self-contained modular pieces of course material that would conform to interoperability standards and be labeled with educational metadata (Baruque & Melo, 2004; Boyle, 2003).

However, in adopting the LO model, we had to take into account another important issue: the pedagogical, practical and cultural barriers that inhibit a wider impact of learning objects on teachers’ daily practices (Lau and Woods, 2009). Amongst these factors, some authors have pointed out how the LO paradigm has been often associated with a “commercial approach” to educational resources, and considered as a solution to sustain LO initiatives and to regulate access to these resources from teachers (Downes, et al., 2004) (Johnson, 2003).

In order to incorporate this issue, under the influence of the new born OER movement, we decided to combine the LO model with the concept of ‘openness’, which could in turn introduce a new model of LO development and sustainability. For this reason, starting from Wiley’s definition of learning object (Wiley, 2002), we defined OpenLO as “any open digital resource that can be reused to support learning”. In this definition the term ‘open’ indicates open content, that is content developed in an open format (e.g. Open Document) or content in closed format (e.g. Adobe Flash) whose source files are also available. In addition it refers to open licences (e.g. Creative Commons) thus allowing users to freely modify and reuse learning objects (Fulantelli et al., 2008).

Through a 4-month online course, 40 Italian teachers from different disciplines collaborated to create 25 open learning objects, which were uploaded in FreeLOms (Gentile et al., 2010), the repository developed during the project. Small pilots were also done in Romania, Slovenia, Spain; finally, the Sloop online course (syllabus, methodological guides for teachers, study material), translated into English, Italian, Romanian, Slovenian and Spanish, was made available for download, so that not only the learning objects, but also the whole course was made reusable. Actually, immediately after the end of the Sloop project, the Italian version of the course was re-used in four different Italian courses (the links to the courses are still available in the Sloop project website).

The online courses for teachers were created on effective e-learning strategies and tools, which were firstly tested in the Sloop project, and after adopted and enriched in the Tenegen and Sloop2desc projects.

Tenegen has been a 2-year project (October 2008 – September 2010, extended till December 2010), involving 11 partners from five countries (Hungary, Germany, Italy, Turkey, the United Kingdom), promoted and coordinated by Prompt-G Educational Centre for Informatics, Hungary.

As a Transfer Of Innovation project, Tenegen has exploited the results of two earlier Leonardo da Vinci projects: Sloop and NETIS (Network for Teaching Information Society - <http://www.ittk.hu/netis/>).

The aim of the Tenegen project was to establish a European environment of connectivism (Bessenyei, 2008; Siemens, 2005) for Vocational and Educational Training (VET) teachers and trainers, to show the significant advantages of being in touch with the Net generation instead of simply delivering knowledge through virtual classrooms and Learning Management Systems ([www.tenegen.eu](http://www.tenegen.eu)), in other words: promoting collaborative learning opportunities.

In order to establish common objectives for the network of teachers involved in the project and thus strengthen ties amongst them, Tenegen proposed the development of OER as one of the main activities for the community of teachers. NETIS provided the philosophical,



sociological, and pedagogical basis to support the paradigms of connectivism for teaching and learning in the Information Society, as Sloop provided the methodological model and philosophical background for the cooperative development of OER.

In Tenegen more than 100 VET teachers, plus trainers in adult education, took part in a 3 year pilot in HU, obtaining 300 course certificates.

Tenegen has produced excellent results, and it has been evaluated as a European best practice.

The last project described in this paper is Sloop2desc (October 2009 – September 2011), coordinated by the National Research Council of Italy. The project has transferred and extended the results of the former project Sloop, by adopting the OpenLO model and the related tools already tested in the Sloop project. Specifically, online training courses for around 600 teachers of secondary schools in Italy, and 90 teachers and trainers in Romania and Slovenia have been activated during the two years of the project.

The objective of the training courses has been the acquisition of knowledge and skills related to:

- the definition of eLearning courses;
- mentoring in a virtual environment,
- the development of “open” digital resources using Web 2.0 tools and systems for the production of Learning Objects
- the design and development of open educational resources on EQF and on European qualification systems. Specifically for Italy and Slovenia, the EUCIP system (European Certification of Informatics Professionals promoted at European level by CEPIS) has been adopted as an example of qualification systems. The IMO certification system in the maritime field has been adopted in Romania.

The courses were structured into two phases in Italy: the training of a number of trainee-tutors in Moodle and web 2.0 tools with a view to those tutors going on to become proficient enough in the tools to be able to train a further, larger group of teachers in cascade courses, thus exponentially widening the knowledge pool. The project in Slovenia and Romania learned from the approaches and experiences of the Italian teacher-training course and implemented Slovenian and Romanian teacher-training courses.

Stakeholders in all the countries of the partners, including representatives from companies, have been involved throughout the project, not only to inform them about the project objectives and activities, but also to involve them in the practical implementation of the project.

In Sloop2desc, more than 800 Italian, Slovenian and Romanian teachers from high-schools and vocational training centres were trained online. As a result, teacher collaboratively produced more than 500 OERs and 50 whole Moodle courses, which have been made available on the FreeLOms repository ([www.freeloms.org](http://www.freeloms.org)).

### **Lessons learned and conclusions**

The three European projects described in the previous section share the same approach to OER, based on the community and Open Learning Object concepts.

However, each project presented its own particular characteristics: in Sloop the concept of collaborative evolution of OER (following the Open Learning Object model) was originally developed. In Tenegen the focus was on the creation of a teachers’ network whose aim was to develop OER, as well as Web 2.0 tools and environments were introduced together with more

traditional Learning Objects authoring tools. Finally, in Sloop2desc, the new educational models based on the European systems for certification of competences were interleaved with the concepts of collaborative production of OER already developed in Sloop.

The three projects also reflected the evolution of OER communities of practices over time. Basically all the teacher-training courses carried out during the projects guided the trainees through different online learning experiences and different approaches to OER development and sharing. The online learning experiences highlighted how the technology is changing the way we learn; furthermore, as the technology and the environments within which learning takes place are changing over time, more and more informal learning approaches, social applications and Web 2.0 solutions have been introduced from one project to another.

Even the difficulties and barriers the teachers had to cope with changed over time. During the Sloop and Tenegen projects, the technical issues connected to standards and the use of tools for producing LOs were perceived as major obstacles by the teachers.

The teachers' interest in the use of new technologies in educational activities and an extra motivation and coaching effort by tutors assured teachers participation and the achievement of the project results.

Another relevant barrier that teachers participating in these projects had to overcome was the lack of experience in having an active role in a community of practice involved in the development of OER. The initial distrust towards the community was quickly overtaken by a collaborative approach developed by teachers while supported by the tutors.

In the Sloop2desc project, the main barriers were not related to technical issues (we introduced Web 2.0 solutions for OER production), rather on the lack of awareness of the potentials of OER in educational processes, and some minor difficulties in cooperating with colleagues. These barriers are directly related to the tension between school teachers' attitude towards traditional teaching methods, and their awareness of the fact that traditional curricula and teaching methods must be renewed and enhanced by introducing new technologies for learning; in turn, this requires that teachers have to cooperate in order to find their personal path to the educational technologies.

Consequently, collaborative production of OERs is not just a different way to produce learning contents; it becomes a paradigm that supports mechanisms of knowledge production and sharing. Accordingly, Open Educational Resources become Social Objects, in other words, objects that mediate the ties between people (Engstrom, 2005).

The collaborative approach proposed and developed during the three projects introduces significant benefits for the educational world: building a community of practice around social objects not only promotes their reuse, but allows teachers to share "learning experiences" and, as a consequence, the context of using those learning resources. This overcomes the difficulty showed by many authors in relation to the description of the context of use of learning resources through structured/unstructured textual description (Klebl et al, 2010; Greller, 2005).

Finally, the fact that teachers "*are organizing around some particular area of knowledge and activity gives members a sense of joint enterprise and identity*" (Attwell & Pumilia, 2007). This allows them to overcome practical and cultural barriers in adopting a new pedagogy, as the one based on OER and new technologies.

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## **Supporting formal and informal, non-traditional learning in the workplace through CPD-related OERs**

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### **Abstract**

Higher Education (HE) is undergoing an unprecedented expansion and though universities cater predominantly for traditional learners (i.e. full-time students, progressing from school to university), there is much HE can offer non-traditional learners (i.e. part-time or occasional students). One type of non-traditional learner is workplace learners i.e. people in employment who wish to access HE to up-skill or re-train to progress their work organisations or career aspirations. By delivering tertiary education to learners in the workplace, universities play a vital role in supporting the knowledge economy through educating the nation's workforce. However, delivering HE to informal learners presents numerous challenges for universities, which are geared more towards discipline-focused, mass education delivered on a semester basis. Universities do not consider it always economical to address the needs of learners who request bite-sized amounts of learning at point of demand, outside normal teaching hours and at any time during the year.

Plymouth University has addressed some of the challenges involved in meeting the needs of informal learners in the workplace. One way has involved providing a flexible work-based degree framework for informal learning. The second way is by making educational materials available electronically for distance learning.

The work-based degree offers a flexible modular framework comprising two, continuing professional development (CPD) awards at Bachelor's (undergraduate) and Master's (graduate) levels. These degrees offer a 'shell' framework which allows informal, non-traditional learners to study on a bite-sized, modular basis. Learners take only those modules relevant to their work or their employers' needs as the curriculum for these awards is work-related rather than discipline-focussed. Learners can earn credit piecemeal that accumulates towards a degree qualification.

We have addressed accessibility to learning materials through the production of a suite of open educational resources (OERs). A market research survey of the generic training needs of employers and employees throughout the South West of England revealed that the following areas were of greatest value to businesses: leadership, management, mentoring, coaching, research methods and work based learning. A grant from the Higher Education Academy and JISC funded a project called Learning from WOeRK ([cpdoer.net](http://cpdoer.net)) which produced 365 credits of OERs covering the above mentioned subject areas to support informal learners in the workplace. Our CPD OERs also support other educators who can re-purpose the material for their own CPD-teaching context.

### **Keywords**

OERs, work-based learning, flexible awards, CPD, professional development.

### **Introduction**

#### *Expansion of HE and diversity of the student population*

Over the last few decades, higher education (HE) in most OECD countries has expanded markedly and in the UK the expansion has been particularly profound with aggregate student numbers doubling (Greenaway & Haynes, 2003) despite controversial developments in the funding of HE and student fees (B.B.C., 2010). The rise in student numbers has been

accommodated by an increase in the total number of HE institutions (HEIs) gaining university status. A recent report from the University and College Union (UCU, 2012) has shown a 27% fall in the number of undergraduate courses available, from 70,052 in 2006 to 51,116 in 2012, and therefore the rise in the student population has been accommodated by larger class sizes. Some have seen this as a move from elite education to a mass HE system.

The expansion in student numbers has led to an increased diversity of the student body (Archer, Hutchings, & Ross, 2003) which, though to be applauded, challenge how universities should address a range of learning styles within a mass education system (Sander, Stevenson, King, & Coates, 2000).

### *Categorising the university student population*

The diverse university student population can be categorised in various ways, for instance on the basis of gender, socio-economic and family background, whether attended a state or private school, ethnic or cultural background, and whether they are international or home students (Schuetze & Slowey, 2002). A useful way of categorising learners is on their mode of attendance, that is, full-time (FT) or part-time (PT) participation. FT learners are often referred to as 'traditional' students and PT learners as 'non-traditional' students. There is a tendency to shy away from using the term 'non-traditional' as it is defined negatively from a 'traditional' student i.e. not a direct entrant from secondary school, not from the dominant social groups in terms of gender, socio-economic status or ethnic background, or not studying in a full-time, classroom based mode.

### *Population of PT learners*

Although non-traditional learners are often thought of as the minority group, they represent a sizeable proportion of the university student population (Universities UK, 2006a). According to HESA (the UK's Higher Education Statistics Agency, <http://www.hesa.ac.uk/>) figures for 2009/10, FT students (defined by HESA as those normally required to attend an institution for periods amounting to at least 24 weeks within the year of study) numbered 1,333,900 compared with PT students (defined as students who are recorded as studying PT, or studying FT on courses lasting less than 24 weeks, on block release, or studying during the evenings only) numbered 580,810. The size of the PT student market is expected to rise as universities look to exploit new digital technologies to offer more flexibility in their programmes (Collis & Moonen, 2001; Middlehurst, 2003) and as student loans from 2012 begin to support PT learners in the same way as FT learners (B.I.S., 2011).

### *Composition of PT learners*

PT learners comprise a heterogeneous group which Kasworm (1993) and Davies (1995) categorised as:

1. Adult students who enter or re-enter HE after a major break in their formal involvement in learning;
2. Students who enrol on academic courses of age 25 years or older (also referred to as mature or adult learners);
3. Adult students who enter HE on the basis of mature life experience gained through work, family and/or community involvement;
4. Adult students who have completed a HE program or degree at an earlier stage and now re-enter for professional updating or to pursue a second academic area of expertise (also can also include lifelong learners).

### *CPD Learners*

The last category described above mostly comprises learners who are employees in the workplace who wish to access HE for professional reasons such as up-skilling or re-training to advance the work of their employers or for personal career advancement. The courses that

workplace learners undertake for their work organisations have a wide nomenclature. For senior managers, it might be called executive education and at other levels it might be called training or professional development. Quite often professional courses form an on-going programme of employee development and it is known as continuing professional development or CPD. In some employment sectors, the term CPD has a specific interpretation but here it is used in its widest sense to include all types of engagement with work-related education as defined by the Higher Education, Business, and Community Interaction Survey (HEBCIS, 2012), 'A range of short and long training programmes for learners already in work who are undertaking the course for purposes of professional development/ upskilling/ workforce development.' It is CPD learners that are the particular focus of this paper.

### *Engagement of CPD learners with HE*

Over the last 10 years, there has been rising expectation that HE should play a greater role in increasing the skills of the workforce, especially the need to encourage HEIs to engage more with employers to meet the country's higher level skills needs (HEFCE, 2011). For example, in the Government's grant letter to HEFCE, the funding body of UK HE, it says, 'We need to develop radical approaches that can lead to much higher levels of access to higher education by older people already in the workplace. This means models of HE that make available relevant, flexible and responsive provision that meets the high skill needs of employers and their staff.' (Johnson, 2007).

In 2006, Universities UK produced two reports on engagement with employer education, one on PT students (Universities UK, 2006a) and the other on universities and employers working together (Universities UK, 2006b) which highlighted that 88% of HEIs offer flexible, tailor-made courses for businesses on campus and 80% offered bespoke education at the companies' premises. The reports admit that the market for CPD has not been extensively researched and neither has the extent of HEI involvement in CPD though in a more recent report from HEFCE (2011) there are signs of increased co-funding of courses between employers and industry.

At present, employers source professional development courses from three main areas. The first is in-house training. The advantage of in-company courses is that the learning content is highly specific to that company and ensures that the business of the company is supported by relevant input. With this type of training, costs are kept low as internal staff deliver the programme and staff development funds remain within the company. The disadvantage is that access to external perspectives, research and new ideas may be limited. The second source of courses is private training providers. These are usually industry specialists that have built up a wealth of knowledge and experience relevant to that particular industry. An extensive review of the private training market in the UK was conducted by the National Institute of Adult Continuing Education (NIACE) in 2009.

The third source of provision is from HEIs. A recent research report, commissioned by a consortium of UK universities, into how universities and colleges are perceived as CPD providers by businesses showed that universities are often seen as focusing the majority of their efforts on the FT undergraduate student market and on research (Euro RSCG Heist, December 2011, unpublished report). Most university courses were seen as too discipline-focussed, inflexible in their delivery and with content that was largely irrelevant to day-to-day workplace practices. Some employers see universities as trying to sell what they can offer (i.e. supply-driven courses) rather than provide what is needed (i.e. demand-driven courses).

Our findings also showed that employers found that universities lacked agility and flexibility in delivery of courses compared with private training providers. Universities organise their activities around FT students in that education is based on a semesterised, week-day, 9am-



5pm, timetable that is set at the beginning of the academic year in September. Employers may need courses delivered at short notice and if academics are already timetabled for lectures they cannot cancel their timetabled commitment to FT students.

There is also a problem with how learning is delivered. Most universities still use traditional teaching methods, such as lectures, seminars and tutorials, which rely on regular, short periods of face to face interactions between lecturer and student strung out across a semester or academic year. CPD learners find it difficult to get leave from work for short regular periods to access this type of learning and instead prefer concentrated periods of learning such as day workshops or short courses. Employers have also expressed an interest in distance learning and though there has been some move in universities to e-learning and distance learning, this area is still under-developed.

#### *Perceived benefits of HE to CPD learners*

Recent developments in the HE sector combined with the expansion of distance learning have provided the opportunity to re-evaluate the position of universities as education providers to the business sector. Universities are putting more focus on CPD learners and are developing new, flexible qualification pathways that are better suited for workplace learners. One such approach is described below. Universities are a largely untapped educational and research resource for businesses and can supply high quality learning at the cutting edge of research and provide innovative ideas through accessing world leaders in new thinking. Work organisations realise that in a highly competitive knowledge economy, innovation is vital to progress a business rather than training that keeps practice at the same level.

A unique selling point of universities as providers of education is their ability to award academic credit. Academically accredited courses allow learners to professionalise their career path and gain academic credit that is transferable across disciplines and internationally. At a time when people do not expect to keep the same job for the whole of their career and when new types of jobs are being created continuously, transferability and mobility of accreditation is becoming increasingly important.

#### **Development of OERs to support CPD learners**

##### *Development of flexible CPD degrees*

As part of its enterprise ethos, Plymouth University has developed two work-focused CPD degree qualifications: a Bachelor's and Master's degree in Professional Development. These new types of degree qualification provide clear pathways for work-based learners who previously would take free-floating accredited or non-accredited courses. The CPD degrees provide a framework in which learners could accumulate credit towards a HE certificate or diploma qualifications or towards a full degree. These degrees also allow work-based learners to take courses in a range of discipline areas. As most university degrees are highly discipline focused, these CPD degrees recognise that employees are required to gain a wide range of skills and knowledge often not catered for in a single discipline degree programme. The framework allows CPD learners to choose from courses across traditional discipline boundaries and as long as the courses are relevant to the needs of the employee and the work organisation, they can be accommodated within the CPD degree framework.

##### *Delivering CPD courses*

With the CPD degrees in place, the next challenge was how best to deliver the learning materials for the CPD courses. A market research survey commissioned for the approval of the CPD degrees confirmed that workplace learners were restricted in how they accessed learning due to work and social commitments. Numerous employees and employers expressed an interest in a blended learning approach whereby they could study by distance learning with occasional face to face meetings or online guidance by tutors. The same market research

survey identified subject areas which were of most value to businesses and these included: management and leadership, coaching and mentoring, research methods and work-based learning. These were areas for which there were few online resources and an area upon which we needed to focus attention.

### *Development of OERs for CPD*

The OERs developed to support learners on the CPD degree framework were produced through the Learning from WOeRK Project conducted by the authors and funded through Phase II of the Higher Education Academy and JISC Open Educational Resources (OER) programme between September 2010 and August 2011. The added benefit of funding through this stream meant that these resources could be made freely available to other providers of CPD.

The project produced and published OERs across a range of subject areas, listed in Table 1 below and involved a cross-University team and a number of key employers. The resources, though developed for tutors in HE, were made directly accessible by learners but generally assume a level of tutor or work-based trainer or supervisor involvement. Project resources were published under a Creative Commons license, that is: Attribution, Non-Commercial, Share Alike (CC BY-NC-SA) licence which allows users to remix, tweak, and build upon the work for non-commercial purposes, providing the original producers are credited and the re-purposed items are licensed under the identical terms (Creative Commons, <http://creativecommons.org>).

The OERs produced by the project were all published and searchable on Jorum ([www.jorum.ac.uk](http://www.jorum.ac.uk)) and UPlaCe repositories (<http://uplace.org.uk>) tagged with LFWOER. They can also be accessed through the project website: <http://cpdoer.net/collections>.

The project team produced the equivalent of 365 HE academic credits, equivalent to 3650 notional learning hours and contributed towards the University's CPD degrees. Materials supported learning at all undergraduate levels (Levels 4, 5 and 6) to postgraduate level (Master's level 7). The successful completion of the project had the impact of producing distance learning resources to support work-based learning, including workforce development, especially of value to micro businesses, SMEs and the third sector; those without their own training departments or resources. Specific resources included modules on supporting a work-based project, mentoring a student on placement, how to establish a social enterprise and a Staff Guide to OERs – all listed in Table 1.

Table 1. CPD-related OERs for learners in the workplace produced by the Learning from WOeRK project.

<b>Subject area</b>	<b>Credit level and location</b>
<u>Leadership and Management</u>	<i>All resources listed below are available from: <a href="http://cpdoer.net/collections/leadership-management/">http://cpdoer.net/collections/leadership-management/</a></i>
Leadership and Management	10 credits each at Levels 4, 5, 6,7
Coaching in the Workplace	10 credits each at Levels 4, 5, 6,7
Mentoring in the Workplace	10 credits each at Levels 4, 5, 6,7 (includes a module to support work-based mentors for students on placement)
Social Enterprise	10 credits at Level 4 (additional module to support those considering the establishment of Social Enterprises)
Project Management	10 credits at Level 5

### Work based learning

*All resources listed below are available from:  
<http://cpdoer.net/collections/work-based-learning/>*

Learning through Work	10 credits each at Level 4, 20 credits at Level 5 and 20 credits at 7
Professional Development and Reflective Practice	10 credits at Level 4, 5, 6
Learning Skills	10 credits at Level 4
Accredited Prior Learning	2x 10 credits at Level 5
Culture in the Workplace	5 credits at Level 4

### Research methods

*All resources listed below are available from:  
<http://cpdoer.net/collections/research-methods/>*

Numeracy and Quantitative Methods	10 credits at Level 4, 5, 7
Qualitative Methods	10 credits at Level 4, 5, 7
Literacies	10 credits at Level 4, 5
Student Work-based Project and Dissertation	20 credits at Level 6

### OER Guides

*Available from: <http://cpdoer.net/resources/>*

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## **Conclusions**

The provision of OERs for CPD learners represented an ambitious project in terms of the technical production of the OER assets and drawing together a wide range of expertise around key CPD themes from across the University. The resultant 365 HE credits-worth of OERs represent an extensive portfolio of distance learning materials to support formal and informal CPD learners as well as providing resources for other HEIs and CPD providers to use or re-purpose. One intention of the project was to encourage other HEIs to engage with OERs for CPD. In this regard, it is worth sharing some aspects of our experiences of the production process:

1. The OER academic developers we engaged largely comprised FT academic teaching staff though some contracted teaching staff were also involved. All developers received a stipend based on the number of credits produced but we found that consultants and contracted staff were more likely to produce resources within the deadline than FT staff which had full teaching workloads that made it difficult for them to meet production targets. As all OERs were signed off by senior staff in each discipline to ensure the quality of the materials, OERs produced by contracted staff were of the same academic quality as produced by FT staff. Our advice for similar projects working within a short deadline is to ensure that FT staff are bought out of part of their teaching to devote real time to producing OERs or to use consultants and contracted staff to produce the assets and to only use senior academics to quality assure the assets.
2. OER academic developers were selected for their subject specialism rather than for their e-learning expertise. In fact, the majority of developers had little or no experience of producing e-learning materials, especially of the exacting nature required for the Creative Commons licence for open materials. A major reason for the success of the project lay in the management of asset production in terms of a supportive technical infrastructure. Numerous workshops were made available that explored the experiences of previous OER projects, explained what production of OERs entailed, especially around intellectual property rights (IPR) issues related to images, diagrams and quotes from third party sources. A full time project manager coordinated activities and two learning technologists were dedicated to support OER developers, formatting learning materials into house-style e-learning resources and clear IPR issues which

often involved sourcing images appropriate for OERs. In addition to workshops, the production of guidance, exemplars and templates were produced which were appreciated by OER developers.

3. A major stumbling block in OER production was confidence in addressing IPR issues. The project brought in experts in IPR to run workshops for OER developers and though these were considered interesting and useful, developers did not feel confident in having sufficient understanding or knowledge of IPR to release their materials directly. The two learning technologists associated with the project dealt with IPR issues on a daily basis and therefore built up a body of knowledge and expertise. Though we recognise that everyone involved in producing learning materials need to appreciate IPR issues, in running a time-limited project it is best for people to work to their strengths with OER developers producing the academic content and dedicated staff handling IPR.
4. As mentioned above, OER academic developers had little or no experience of distance learning. Most, if not all, produced electronic materials to support their teaching in the form of presentations or text documents. Quite often, these materials contain a limited amount of information as the intention was to use them as teaching aids which would be explained in greater detail during face to face sessions. OERs for CPD were intended for use by other providers and for distance learning without face to face interaction and therefore the materials needed to be fairly detailed with background information. We termed this approach 'wrap-around' whereby basic presentations were supplemented with a more detailed explanation in the form of text, audio and video files. We would highly recommend that any OER be accompanied by detailed support material.
5. Most of the developers had experience of teaching FT undergraduate students. CPD learners, because they are based in the workplace, require more practical and work-focused materials and examples. It is therefore important to involve OER developers who have had first-hand experience working in business or industry in their particular field. Here, we consulted employers to provide an insight into what materials would be of relevance to them.
6. Sustainability of OER production is a major consideration. This funded project allowed us to engage staff to produce materials but the long term aim was to be self-sufficient and engender a culture of OER production. The close linkage between OER development and the CPD degrees provides the basis for one business model for sustainability whereby the income from the degree finances further production of OERs. Any business case for supporting OER production must consider incentives for staff to engage and for the provision of dedicated learning technologists to support the production of high quality and IPR-cleared OERs.

### **Acknowledgements**

We would like to thank the Higher Education Academy and JISC for their financial and management support throughout the Learning from WOerK project.

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## **The Fourth Waseda University JOCW Project: Making use of mobile technologies and Cloud Computing**

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### **140 micro-abstract:**

The end-user device independent system, accessible via PC, iPad, iPhone and Android cell phones, was tested in our cloud computing environment.

### **Abstract**

The end-user device independent system, accessible via PC, iPad, iPhone and Android cell phones, was tested in our cloud computing environment. This is the fourth project to contribute to the OpenCourseWare activities: in 2006, single sign-in system for the JOCW participation from our LMS; in 2007, ontological search engine for the massive digital contents; in 2011, cross-cultural distance learning (CCDL) partner search programs for 91 universities and new-comers in the 24 countries; and application of mobile technologies and testing usability in cloud computing environments. In this presentation, the fourth project was focused on and provides the pedagogical data, in order to investigate the educational merits and demerits, prior to the implementation for the wider public use.

### **1.0 An Introduction to Waseda JOCW and our 1<sup>st</sup> Project: single sign-in system**

Our initial policy to choose JOCW courses from the on-demand courses and face-to-face courses available in our original LMS called Course N@vi was that it should highlight the academic traditions at Waseda University: Japanese Language and Literature, Legal and Political Sciences as well as Engineering and Computer Sciences. We started with the 8 courses in 2005. Table 1 summarizes the number of on-demand courses which have participated in JOCW since 2005.

Table 1 Waseda JOCW courses offered

Year	2005	2006	2007	2008	2009	2010
No. of courses	8	24	43	64	67	71

Since 2005, we have accomplished the five projects to expand our contribution to JOCW. The first one in 2006 was the single sign-in system for lecturers to participate in JOCW anytime and anywhere directly from our LMS. Distance Learning Center(DLC) and Media Network Center(MNC) launched JOCW as a social outreach program using distance learning techniques. OCW's objectives are to make education at Waseda more open and to contribute to the formation of a worldwide education network

- With linkage to a Web syllabus system, instructors can post teaching materials any time all on their own
- Courses with materials posted to OCW are automatically listed on the Waseda University JOCW Website



Tables 2 and 3 indicate the number of on-demand courses available at Waseda University.

Table 2 Number of on-demand courses

	2005	2006	2007	2008	2009	2010
Full on-demand	93	100	119	128	122	120
Blended on-demand	302	341	337	389	362	326

Table 3 e-school data

	2005	2006	2007	2008	2009	2010
No. of courses	313	395	439	508	535	545

In spite of our technological assistance to encourage the participating courses, only 6.5% of digital contents was offered to JOCW.

## 2.0 The 2<sup>nd</sup> Waseda JOCW project: the implementation of Ontological search engine

Ministry of Internal Affairs and Communication in Japan had funded Asia Broadband Experiments in 2005, 2006 and 2007 for the purpose of ensuring the educational values in expanding broadband connections between Thailand and Japan. GITS and Distance Learning Center at Waseda University participated in the cyber experiments by offering cyber courses to Chulalongkorn University in the past three years. NTT Communications and NTT Software provided the necessary equipments and ascertained the cyber connections between the two universities. It has been noted by the two parties that the cyber lectures and discussion were useful educational tools in the 21st Century; wherever you were, you would receive high quality education, once the network connections were established. In this context, NTT Communications and NTT Software developed bilingual lexicon and generative dictionary content in addition to multi-pass search engine. The 2<sup>nd</sup> Waseda JOCW expanded the ontological search engine.

Ontology-based Dictionary (henceforth Ontology Dictionary) grows itself by means of the cycle of tagging Learning Objects (LOs) by Metadata which creates LOM, automatic renewal as well as manual renewal systems, as shown in Fig. 1.



オントロジー辞書は、LO登録、自動更新、手動更新のサイクルにより自動成長する

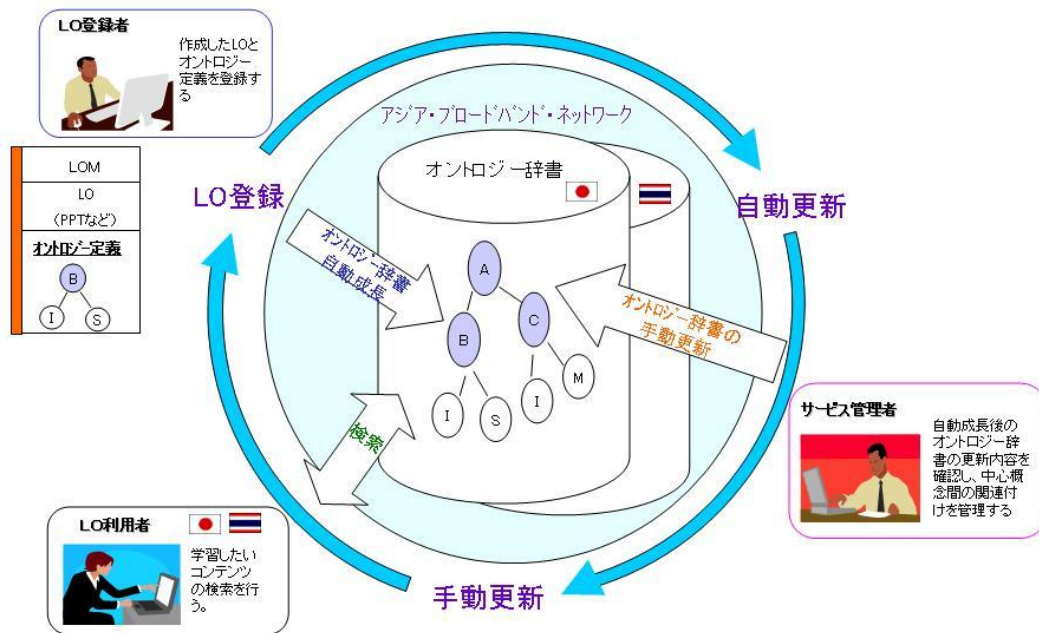


Fig. 1 System Image

Expert (Nakano) and System Service Manager (Kondo) provided draft for Ontology Dictionary which include central concepts, super-ordinate category names, subordinate hyponyms, synonyms and described the various relations for Japan English and Thai English. These are written in English and they are translated into Japanese as well as into Thai. These are used as materials to ontological definitions. Registration of LOs stands for tagging ontological definitions in the system. The system automatically detects the portion of ontological definitions to be renewed. Simultaneously the relations among central concepts are automatically renewed. This information is transmitted to Thai Dictionary as well as to Japanese Dictionary separately and each Dictionary is renewed. For this reason, LO users do not need to search Learning Objects Metadata (LOM) directly, but they can search in the renewed ontological Dictionary. Furthermore, the system includes manual renewal interface in which the renewed relationships among central concepts are checked for their accuracy by System Service Manager.

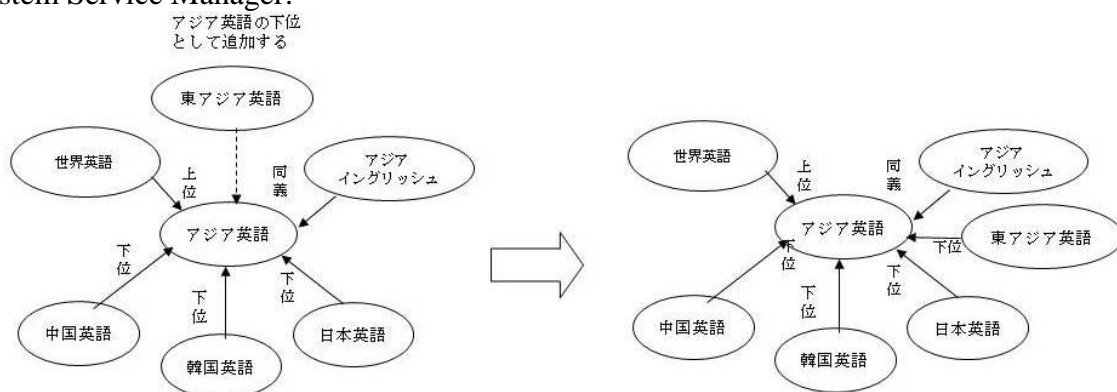


Fig. 2 Automatic renewal ontological concepts



In order to examine user-Friendliness of self-generative ontological lexicon in the Multilingual environment, LO users in Thailand and in Japan used the ontological search engine in studying many aspects of Thai English and Japan English. As a mini-experiment, LO users watched three 5-minute on-demand lectures and searched the relevant LO by inputting keywords which occurred to their mind. LO users and Expert used Ontological Dictionary tagged with LOM to see whether LO taggers tagged the relevant metadata to LOs. They were also asked to compare the initial Ontological Dictionary with the automatically renewed Ontological Dictionary. This was to check whether the step-wise search interface is adequate or not. The experiment confirmed the adequacy of the ontological search engine.

### 3.0 The 3<sup>rd</sup> Waseda JOCW Project: CCDL partner search system

It has become our mission in the 21<sup>st</sup> century to educate our university students as Global Citizens so that they can say their opinions in English about not only global issues but also the more immediate issue of Coexistence in Asia. It is also important for young generations to build human network in the world. How can we help our students to be able to solve real problems in the world? The easiest way is to provide discussion opportunities in their daily life by making use of Information, Communication Technology (ICT) and Multi-Point Distance Communication System. The recent technological advancement enabled our students to discuss contemporary issues with oversea partners, every day, day and night, beyond the borders of space and time.

### 3.1 Status of English in Global Economy

Since English began to be used as a common tool of communication in accordance with globalization, the most common local problem in Japan is a student's lack of English oral proficiency required to discuss the current problems in the world, such as climate change which inherently contains such irrevocable dilemmas about national interests as opposed to lengthy process of idealistic consensus-building towards global solutions. In addressing other current problems in the world without resorting to the military powers, we need to realize that global solutions can be reached at with our firm recognition that this is the age of dialog. In this sense, English Education has been highlighted as a means of promoting dialog more urgently now than before. In order to overcome the local problem mentioned above, Waseda University adopted the three stages of English Education, as shown in Figure 3: tutorial English to promote communicative competence, cross-cultural distance learning to promote inter-cultural competence and cyber seminars among Asian students to promote discussion ability on complex issues.

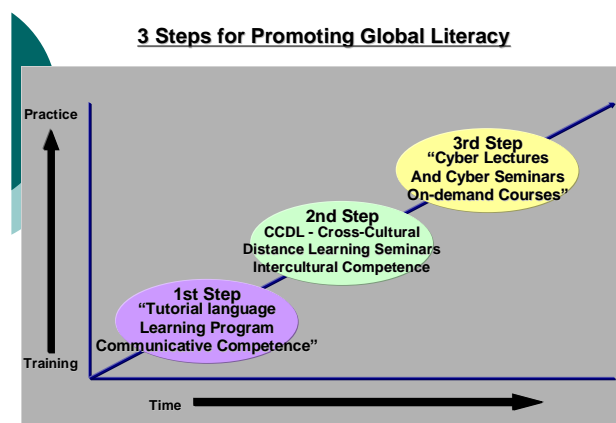


Fig. 3

Communicative Competence is summarized by Kramsch (2005) as Melting Pot View; i.e., you are accepted once you conform to the main stream of American or British Culture and

Societal norms embedded in Native Speaker (NS) English. Without being melted into the mainstream NS norms nor blindly following their norms, communicative competence can be introduced in Asia; we need to know NS values and how NS speakers behave, but we do not need to mimic them. Once Asians are accustomed to detach ourselves from the authority and social norms, and to test ourselves as individuals, we would begin to trust our instincts and feelings and could think outside the box. For this reason, our programs at the first stage of Educational goal are based on communicative competence. In the second stage, we conduct one-to-one cyber seminars in which Intercultural Competence is introduced. Intercultural competence is metaphorically summarized by Kramsch as Salad Bowl View in which differences are respected as diversity, but the sense of unity may be difficult to achieve. English Language Education at this stage is called CCDL (Cross-Cultural Distance Learning) programs at Waseda University. We use videoconferencing system (Polycom) and/or the PC chat system (LiveOn) and conducts exchanges with students from partner overseas universities in English. Exchange tools between Waseda students and overseas partner students are either TV conferencing system and/or oral chatting system.

CCDL promotes understanding of different cultures and provides opportunities to gain practical communication abilities in English, which leads to links with Asia and steps to the world. This is the age of Dialog. Conflict resolutions had better be reached at by dialog rather than military powers. At the tertiary level of Education it is better for us to give Dialog training to our students. The role of English in Global Literacy should transform itself and the nature of English Language Education should be shifted from NS-oriented to Englishes-oriented.

At the final stage, cross-cultural competence is focused in our education; Cross-Cultural Competence represents a set of social and emotional intelligence to cope with incommensurable world views. Multi-point Distance Learning System is utilized and the students need to cope with multiple points of views such as historical perspective, socio-economic perspective, political perspective involving not only the point of view of a global citizen but also that of an expert in a given area. In the second section of this paper, our educational outcomes are briefly described in terms of motivation, and social skills. Tables 4 and 5 summarizes our educational efforts in Asia.

Table 4 The Number of Cyber Exchange courses at Waseda University

	2005	2006	2007	2008	2009	2010
No. of Subjects	34	45	67	83	102	85
No. of students at Waseda	2,235	3,211	3,379	3,477	3,543	3,574
No. of students at Overseas	1,181	2,094	3,058	3,882	4,422	4,254

Table 5 The number of participating overseas universities for cyber exchanges

	2005	2006	2007	2008	2009	2010
Countries	21	21	21	24	24	24
Universities	52	55	78	86	89	91



Fig. 4 Cyber Exchange Course & Fig. 5 International Student Forum

### 3.2 Evidence for Educational Merits of Cyber Programs

Generally, Program Assessments can be done by looking at the following two points:

How much a program can promote a learner's motivation to learn

How much a program can improve a learner's social skills (communication skills + intercultural knowledge)

In AROCC Conference, we reported motivational merits; in this paper we report social skills and accommodation skills which are important components in inter-cultural communication skills.

The questionnaire items consists of 34 items taken from Student Skill-streaming Checklist (Goldstein et al., 1997) and 6 items based on Communication Accommodation Theory (CAT: Shepard et al., 2001). 220 Asian EFL learners responded to the 40 items: 14 Chinese students, 39 Taiwanese students, 21 Korean students and 146 Waseda University students. They were all engaged in Cross-Cultural Distance Learning activities.

In order to attain the purposes of this study, we analyzed the data in two ways. First, we adopted all the procedures used in our pilot studies (see, Yoshida & Nakano, 2009). In short, we factor-analyzed the 34 items selected from Student Skill-streaming Checklist (Goldstein et al., 1997) so as to examine the consistency of the resulting factor structures. Prior to performing the EFA, we checked descriptive statistics and results of I-T correlation analysis for the 34 items and then, if necessary, eliminated some items for appropriate computation. For example, we eliminate the item whose resulting I-T correlation is less than 0.4, as in Kikuchi (1988). Then, we analyzed the 6 CAT items and the above 34 items altogether. In this analysis, we simply put the 6 items in the EFA and discussed the resulting factor structures. In this way we have verified that the factor structures were consistent with our previous studies. This paper presents the factor analysis of all the 40 items and compared the group mean factor scores.

In the first analysis, KMO Measure of Sampling Adequacy was 0.922; Bartlett's Test of sphericity yielded statistical significance; and all the items except for CAT 5 and 6 had enough degree of KMO statistics for individual items, ranging from .862 to .967. As for CATs 5 and 6, their values were .555 and .548, respectively. However, we included them in EFA since these values were still acceptable due to their slightly larger values than the criterion, 0.5. Thus, we proceeded to the analysis. In this process, we excluded items 17, 39, 43, 49, 50 and CAT 2 due to their degrees of factor loadings; and item 38 because of their cross-loadings on two factors. As a result, we extracted 5 correlated factors. Table 6 shows the result.

Table 6 The Pattern matrix of Final Analysis

Label	Item	Factor				
		1	2	3	4	5
Stress	Item32	.955	-.107	.064	-.102	-.028
Aggression	Item28	.892	-.010	-.055	-.169	-.065
Feeling	Item18	.719	-.147	-.022	.141	-.084
Stress	Item34	.671	.098	-.051	.027	.047
Stress	Item40	.633	.093	.009	-.027	.138
Aggression	Item22	.586	-.124	.108	.155	.001
Aggression	Item25	.455	.266	.073	.060	-.084
Stress	Item36	.450	.321	-.109	-.052	.087
Aggression	Item24	.417	.118	.116	.124	-.113
Feeling	Item20	.380	.205	-.152	.184	.147
Basic	Item8	-.045	.716	.013	-.071	-.010
Basic	Item7	-.098	.639	-.115	.124	.068
Advanced	Item10	.137	.637	.048	-.103	.071
Basic	Item2	-.032	.568	.210	-.034	-.131
Basic	Item4	.047	.541	.075	.006	-.103
Advanced	Item11	.245	.459	-.052	.088	.059
Feeling	Item16	-.092	.359	.215	.255	.073
CAT	CAT2	-.037	.029	.850	-.189	.036
CAT	CAT3	.090	-.116	.610	.118	.158
CAT	CAT1	-.049	.054	.524	.089	-.004
Basic	Item3	.032	.203	.397	.069	-.120
Planning	Item47	-.023	-.031	-.075	.873	-.035
Planning	Item45	-.095	.150	.082	.670	.010
Stress	Item41	.258	-.090	.011	.547	.075
Planning	Item44	.116	.213	-.099	.524	-.076
Planning	Item48	.307	-.110	.123	.437	-.037
CAT	CAT5	-.055	-.055	.050	.089	.867
CAT	CAT6	.037	.053	.034	-.126	.854

We calculated Cronbach's alpha if the item was deleted for each factor. As a result, reliability coefficients for Factors 1, 2, 3, 4 and 5 were calculated of .893, .854, .784 and .723, respectively. In addition, among the 4 factors, there were no items that dramatically improved the overall alpha if it was deleted. Therefore, we can be confident that the resulting 4 factors were suitable to the data set.

We named Factor 1 'Skills for Dealing with Affective Issues' ( $\alpha=.898$ ), Factor 2 'Beginning Skills for L2 Communication' ( $\alpha=.823$ ), and Factor 4 'Planning Skills' ( $\alpha=.838$ ), respectively. As for Factors 3 ( $\alpha=.728$ ) and 5 ( $\alpha=.862$ ), each of these factors consists of CAT items. Since CATs 1, 2, and 3 were based on the notion of convergence while CATs 4, 5, and 6 were on divergence, we renamed Factors 3 as 'Communicative Tendency toward Convergence', and Factor 5 as 'Communicative Tendency toward Divergence', respectively.

Figures 6-10 show the comparison of mean factor scores among the different nationalities and 5 groups of Waseda University participants.

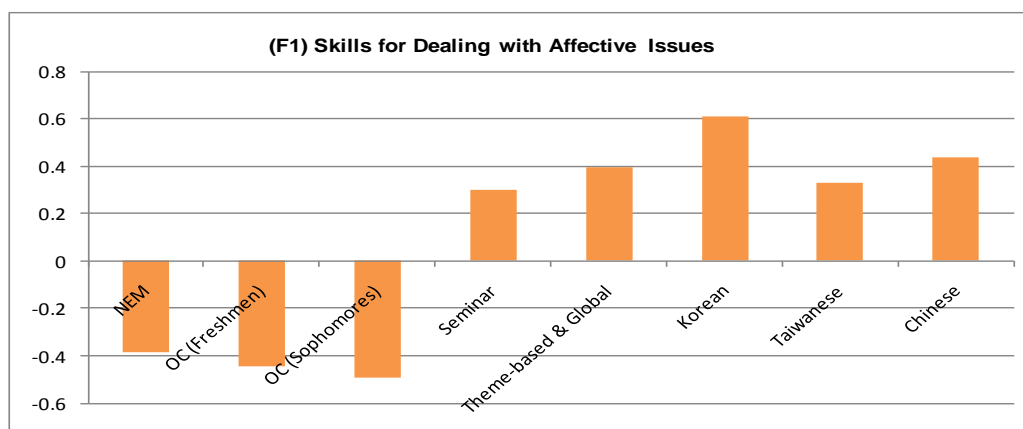


Figure 6: Comparison of Mean Factor Scores (F1)

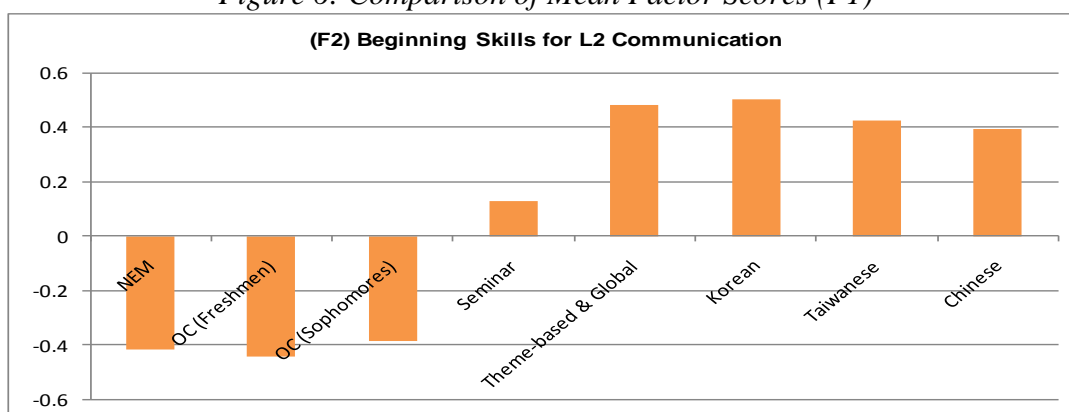


Figure 7: Comparison of Mean Factor Scores (F2)

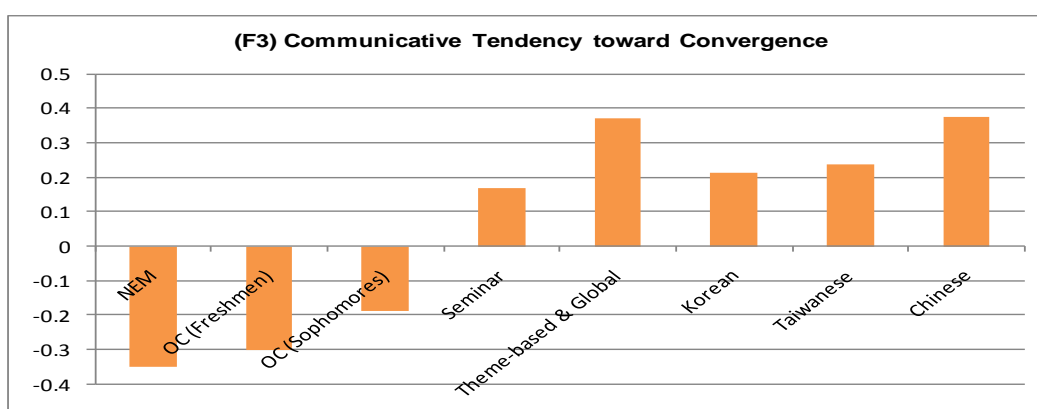


Figure 8: Comparison of Mean Factor Scores (F3)

Contrary to our finding in Discourse Completion Tasks, Figure 3 shows that Chinese and Japanese were more convergent than Taiwanese and Koreans.

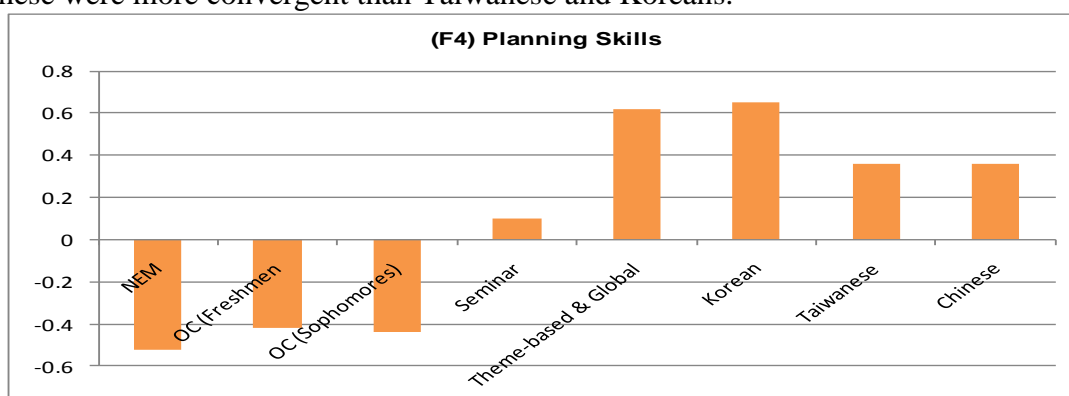
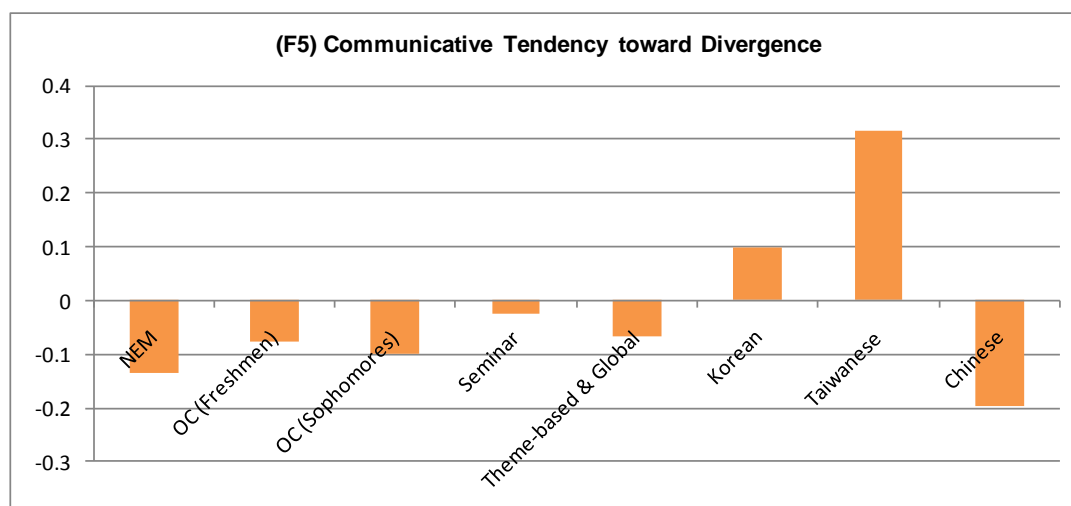


Figure 9: Comparison of Mean Factor Scores (F4)



Factor 10: Comparison of Mean Factor Scores (F5)

Figure 10 shows that Taiwanese and Koreans are more divergent than Chinese and Japanese. As in Figures 6-9, Waseda students in seminar and theme-based & Global groups as well as foreign students (i.e., Chinese, Taiwanese and Korean students) scored highly on Factors 1, 2, 3 and 4; that is, these students would frequently utilize the skill techniques for facilitating their cross-cultural English communication. On the other hand, Waseda students in OCs (i.e., obligatory classes) scored lower than the grand means in all the comparison.

Figure 10 implies that some Taiwanese and Korean students tend to emphasize their advantages with respect to the amount of knowledge on discussion topic or speaking ability over their interlocutor(s), and then show disdain for them. Although this communication tendency might cause some problem with their partner(s), we believe that some CCDL participants are sometimes apt to show the feelings in their cross-cultural communication. In future study, therefore, we would like to survey this aspect in detail.

### 3.3 CCDL partner search site

Cross-Cultural Distance Learning (CCDL) Partner Search Site was opened as a part of WOCW, due to the increasing number of applications from oversea universities. The instructors register their mailing address and Time Zone in My Account first. They are asked to fill in Profile (name, affiliation, specialization and research interests). When you log in, you will see a list of previous cyber sessions in the recent years. This is useful in letting the users know the range of cyber topics and research tasks which have been carried out in the recent past. The cyber sessions include synchronous cyber lectures, asynchronous on-demand lectures, live video-conferencing lectures, graduate seminars, multi-point student discussion forums, one-to-one cyber forum, oral chat, and textual chat, etc. This list of cyber sessions includes such information as the theme, tasks, the names of participating universities, department, the person in charge, schedule, language used, the number of participating students, the methods of cyber exchange (LMS, PC-based video chat, oral or textual, one-to-one video conferencing, multi-point video conferencing and session reports. The session reports are helpful for the new-comers; some examples are provided below:

1.4 Please feel free to note any observation on how your students are engaged in the PC chat activities. If you have collected comments or chat log from the students, please refer to them.

*Many students commented that PC chatting was very meaningful, because they didn't have any experience to exchange opinions with Asian university students until joining this program. This experience was a good training for them to convey their own opinion to others. The CCDL activities offer authentic communicative situations to our students.*

2.4 Based on your classroom observations, do you have any request to Distance Learning Center, in order to improve the quality of CCDL exchanges?

*This program was very helpful in improving their skills to react quickly and to have confidence that their English is comprehensible enough. According to the chat log, students from partner universities were much more efficient but by learning facilitation skills, they could overcome some inferiority complex.*

3.4 How did you integrate CCDL interactions into the entire lesson structure? How have you coped with the differences of the academic calendar between the two universities?

*I announced this chat program to students beforehand in the study guidance this year. I told them that the main purpose was to enjoy the cross-cultural interactions, and through this program, it was expected to automate your passive knowledge of English grammar and vocabulary, etc. I think it helped students to have motivation to join the session.*

The instructors who read these reports might be more encouraged to join the CCDL programs. They are invited to fill in “Create new session partner site” in which they specify the discussion topics, the language to be used, the dates of starting sessions, the times, the duration, the frequency of exchanges and the expected number of students. Our site indicates the cyber session partner who satisfies the session request specified.

**Course title:**  
Cross-Cultural Distance Learning(CCDL)(Media) 05(Tamkang University)

**Language:**  
English

**Exchange partners:**  
Alex Tu  
Junko Negishi

**Schedule:**  
Thu, 05/12/2011 - 14:45  
Thu, 05/19/2011 - 14:45  
Thu, 05/26/2011 - 14:45  
Thu, 06/02/2011 - 14:45  
Thu, 06/09/2011 - 14:45

**Classroom:**  
120-3-205

**Number of students:**  
9 students

**CCDL Method**

**PC-based video chat:**  
In Class

**Video conference:**  
In Class  
Course N@vi:  
Out of Class

Theme	Name	Language	Schedule	Exchange partners	Last updated
Seminar in English Language and Literature I, II, III	Hiroshi Matsusaka	English	Thu, 06/02/2011 Thu, 06/09/2011	Kyung-Hee Choi Hiroshi Matsusaka	Sun, 09/11/2011 - 09:35
Seminar I, III (Intercultural Communication)	Rika	Japanese	Wed, 06/08/2011	松本 国弘	Sat, 09/10/2011

Fig.11 Screen Shot of CCDL Partner Search Site

This CCDL Partner site is expected to increase the number of overseas participants in Waseda JOCW.

#### 4.0 4<sup>th</sup> Waseda JOCW Project: making use of mobile technology and cloud computing

The end-user device independent system for online reading was prepared, accessible via PCs, iPad, iPhone and Android cell phones. We also experimented the system, using virtual desktop infrastructure and cloud computing. Ministry of Internal Affairs and Communication (MIC) and Ministry of Education, Culture, Sports, Science and Technology (MEXT) launched experimental use of tabloid PCs and high-speed wireless environments at ten elementary schools in 2010 and ten more junior high schools in 2011. According to the survey made by Japan Association of English Teachers (JACET) in 2009, the university students welcome the interactive use of mobile technologies in their learning environment. Thus, Distance Learning Center and Media Network Center decided to experiment mobile technologies and virtual desktop infra-structure in relation to English Language Education.

#### 4.1 English Course experimented

Discussion English Tutorials (Intermediate) was chosen as an experimental course. Discussion English Tutorials (DTE) consists of 20 lessons, held twice a week. There are two



levels: Intermediate and Advanced Tutorials. In this paper, we discuss Intermediate DTEs. The following table explains the course design:

Table 7 Discussion English Tutorial Course

Lesson 1	Course introduction	Lesson 11	Reading & discussion
Lesson 2	Phrases and Communication Skills I	Lesson 12	Reading & discussion
Lesson 3	Reading & discussion	Lesson 13	Reading & discussion
Lesson 4	Reading & discussion	Lesson 14	Phrases and Communication Skills III
Lesson 5	Reading & discussion	Lesson 15	Reading & discussion
Lesson 6	Reading & discussion	Lesson 16	Reading & discussion
Lesson 7	Reading & discussion	Lesson 17	Reading & discussion
Lesson 8	Phrases and Communication Skills II	Lesson 18	Reading & discussion
Lesson 9	Reading & discussion	Lesson 19	Group discussion
Lesson 10	Reading & discussion	Lesson 20	Group discussion

The course was targeted to yield two learning outcomes in terms of Informal Discussion skills and Formal Discussion skills:

#### Informal Discussion

- Can express his/her ideas and opinions with precision, present and respond to complex lines of argument convincingly.
- Can account for and sustain his/her opinions in discussion by providing relevant explanations, arguments and comments.
- Can take an active part in informal discussion in familiar contexts, commenting, putting point of view clearly, evaluating alternative proposals and making and responding to hypotheses.

#### Formal Discussion

- Can keep up with an animated discussion, identifying accurately arguments supporting and opposing point of view.
- Can express his/her ideas and opinions with precision, present and respond to complex lines of argument convincingly.
- Can contribute, account for and sustain his/her opinion, evaluate alternative proposals and make and respond to hypothesis.

In preparation before the class, the students are requested to read 1000 word Editorials and to outline the main gist of each editorial. During the class they discuss the content of news paper editorials, taking the stand of pro vs cons. After the lesson, they are asked to write a reflection paper whose topic varies, depending on the content. They are taught how to paraphrase difficult concepts, summarize the gist, how to structure their argument logically, how to interrupt to take a floor and how to use delaying expressions to gain linguistic planning time, etc.

Since the news paper editorials contain advanced vocabulary which are beyond 3000 word level, our mobile phone project team decided to include online vocabulary helper to assist our students. By using range analysis, we listed words whose British National Corpus (BNC) word levels are beyond 2000. We added English paraphrases to these words; the students learn the meanings of difficult words by clicking them. After reading the entire editorials, they are asked to answer T or F questions or multiple choice questions, in order to confirm



their comprehension. If they could not answer correctly, they are encouraged to read the content again and to answer the questions until they answer 100 %. They repeat the same learning process until they exhaust the entire editorial paragraphs. Then, they are given a vocabulary test in which difficult English words are given three alternative Japanese translations one of which is correct. Each paragraph contains 2 up to 10 advanced vocabulary. The vocabulary Test at the end of each lesson had 20 items on average.

The students access the e-learning system and store the reading materials and online vocabulary helper in their mobile devices or PCs so that they can study on the way to and on the way back from the university. The trial sessions started at the beginning of October. 120 students were asked to take part in the trial sessions. We will report the outcome of the trial session during our presentation.

## 4.2 Mobile Learning Environment tested

It was implemented as an Web (HTML5) application so that it can be accessible via Android Mobile phones, iOS (iphones and iPad) and PCs. The resolution was 800\*480. Server is operated by Apache Tomcat JDK PostgreSQL. Clients access the digital contents via HTML5.

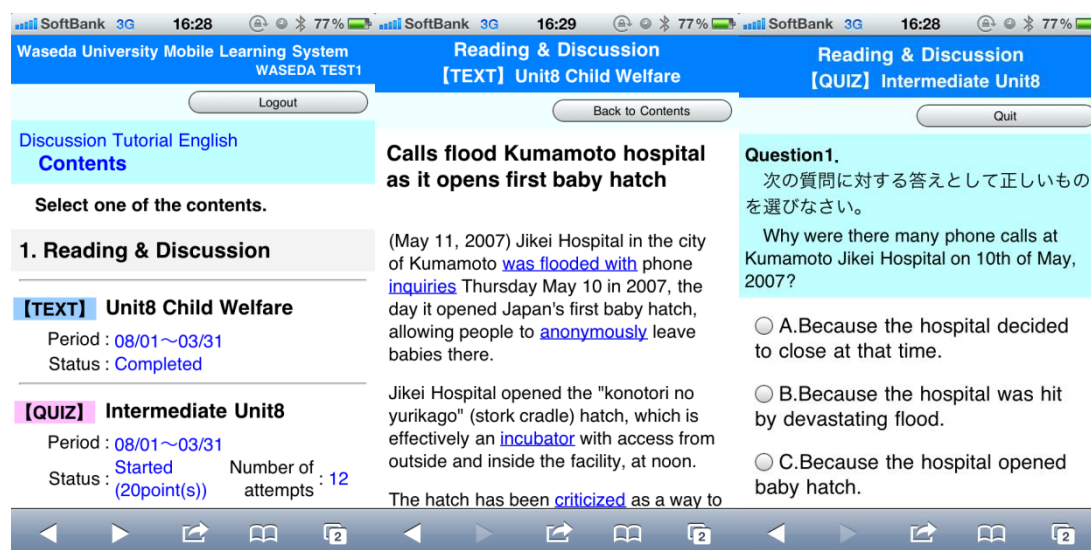


Fig.12: Screen Shots of Mobile Content

## 4.3 Mobile Experiment

Questionnaire was given twice: at the onset of the experiment and at the end of the experiment. The students are asked to join the experiment on the voluntary basis. The design of the experiment consisted the three blocks. Since every 7<sup>th</sup> lesson was a review unit, we repeated pre- and post-test design. In the first lesson, Pre-test 1 (30 randomized vocabulary items from the words learned from unit 1 till unit 6) was given to the participants. In the seventh lesson, 30 randomized items which are different from those in Pre-test 1 was presented as Post-test 1. The same procedure was repeated three times.

120 students enrolled in DTE, but 92 took the course. Out of 92, only 18 completed the experiment. The devices used by the 18 students are listed in Table 8. They all received A+, suggesting that only diligent and hard-working students completed the mobile experiment.

Table 8 Devices used by the students

Devices used	Number
Mobile and PC	1
Mobile and Textbook	1
Mobile, Textbook and PC	1
iPad	8
IPad and PC	1
iPad, PC and Textbook	3
PC and Textbook	1
PC	2
Total	18

Table 9 summarizes the result.

Table 9 t-tests in three blocks

	Mean	SD	t-test
Pre-test1	23.3	3.09	t(15)=0.66, p=.51( two-tailed)
Post-test 1	23.9	4.25	
Pre-test2	20.8	3.86	t(15)=4.09, p<.01( two-tailed)
Post-test 2	23.0	2.94	
Pre-test3	18.8	3.33	t(15)=2.07, p=.055( two-tailed)
Post-test 3	20.3	3.51	

The first block did not yield statistically significant difference. The second block indicates statistically significant difference. The third block showed statistically significant tendency. The result supports to some extent the educational merit of mobile experiment; thus, once the same method is applied to Waseda JOCW courses, we might be able to increase the number of participants.

#### 4.4 Virtual Desktop in Cloud computing

In this experiment, we used mobile content discussed in Section 4, a part of listening comprehension in CCDL discussed in Section 3 and the on-demand lecture ‘World Englishes and Miscommunication’ presented in the Ontology search engine in Section 2. The purpose of our experiment was to ensure feasibility and usability of Virtual Desktop in Cloud computing in our Waseda JOCW project. Cloud Computing is accessible via Desktop as a Service (DaaS) and XenDesktop and XenServer (Citrix Systems Japan) enabled us to construct virtual desktops. Ten students used iPads with 3G wireless service as well as PCs in their home with optical fiber connections with 1Gbps. This comparison is meant to check the feasibility of 3G connections as DaaS in contrast with the more popular mode of Cloud connections via PCs.

Nakazawa et al. (2012) reports that the two way traffic beyond 300 ms prevents learners from typing 110 letters per minute and that the ideal Time Lag should be within 200 ms. Furthermore, they indicate the band range among 2200 kbps, 400 kbps, 200kbps and 100kbps does not influence the typing speed; it fluctuates between 125 and 116 letters per minute. Thus, Nakazawa et al. suggests that Time Lag affects performance more than Network Band. The simple task such as pressing the radio buttons requires 200 Kbps and the task is finished within 30 to 40 seconds. 25% packet loss deteriorates the performance of typing 85 letters per minute, compared to 125 letters per minute without any packet loss. Complex task such as drawing 12 squares on the PPT slide allows for only 10% packet loss. Since Nakazawa et al. used the same DaaS environment we used his data as the baseline data.

3G Network Band (iPad) was measured three times. The result is shown in Table 10.

Table 10 Band Width and Time Lag in 3G iPad as DaaS

	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>
Network Band	486.34 Kbps	330.91 Kbps	305.66 Kbps
Time Lag	554 ms	91 ms	113 ms

Compared with Nakazawa baseline data, we could say that 3G iPad as DaaS is possible to use within Japan, due to the oversea data by Koizumi et al. (2012); Koizumi et.al (2012) reports that network band from Loss Angels ranges from 2.7 Mbps to 2.24 Mbps; Lag ranges from 6347 ms to 4511 ms. They also investigated computer traffic from Sydney; network band ranges from bps1.10 Mbps to 1.56 Ms; lag time ranges from 18805 ms to 17577 ms (4-480). Koizumi et al. thus suggests that the access to DaaS from abroad might be difficult.

In the present experiment, we asked our participants to answer the six questions.

1. Reading Ease of Texts in Mobile Content in Section 4
2. Pop-up Lexical Annotation in Mobile Content in Section 4
3. Ease of Auditory Information in the on-demand lecture in Section 2 and Section 3
4. Listening Comprehension Questions in Section 3
5. Ease of Processing Graphic Information in Section 2
6. Ease of Comprehension of on-demand lecture in Section 2

The results are shown in Tables 11-16.

Table 11: Reading Ease of Texts

	PC	iPad
Appropriate	5	5
uncertain	2	3
inappropriate	2	1

Note:  $\chi^2=0.53$ ,  $df=2$ ,  $p=1.000$

Table 12: Pop-up Lexical Annotation

	PC	iPad
Appropriate	4	5
uncertain	5	4
inappropriate	0	0

Note:  $\chi^2=0.22$ ,  $df=2$ ,  $p=1.000$

Table 13: Ease of Auditory Information

	PC	iPad
Appropriate	9	3
uncertain	0	2
inappropriate	0	4

Note:  $\chi^2=9.00$ ,  $df=2$ ,  $p=0.009$

Table 14: Listening Comprehension Questions

	PC	iPad
Appropriate	9	4
uncertain	0	2
inappropriate	0	3

Note:  $\chi^2=6.92$ ,  $df=2$ ,  $p=0.029$

Table 15: Ease of Processing Graphic Information

	PC	iPad
Appropriate	3	1
uncertain	3	0
inappropriate	3	8

Note:  $\chi^2=6.27$ ,  $df=2$ ,  $p=0.068$

Table 16: Ease of Comprehension of on-demand lecture

	PC	iPad
Appropriate	7	0
uncertain	1	2
inappropriate	1	7

Note:  $\chi^2=11.83$ ,  $df=2$ ,  $p=0.001$

Our investigation confirms the feasibility of DaaS in 1 Reading Ease of Texts, 2 Pop-up Lexical Annotation and 5 Ease of Processing Graphic Information. This means that textual mobile content and viewing on-demand lectures are usable, but the auditory reception of on-demand lectures and listening comprehension are not helpful materials, when they are delivered as DaaS.

## 5.0 Tentative Conclusion

In this paper we reported our four projects: single sign-in system in 2006 for the JOCW participation from our LMS; in 2007, ontological search engine for the massive digital contents; in 2011, cross-cultural distance learning (CCDL) partner search programs for 91 universities and new-comers in the 24 countries; and application of mobile technologies and testing usability in cloud computing environments. Apart from DaaS experiment shown in Section 4.3, all our projects have potentials in contributing to JOCW activities. Even DaaS will become useful in years to come.

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# **The Health of OER reuse; the reuse of health-OER.**

Richard Windle, Nottingham University

Paper not submitted

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# **The impact of developing Open Educational Resources (OERs) on novice OER developers**

Jane Hughes and Colleen McKenna

## **Abstract**

In this paper, we focus on the experiences of a small group of academics, new to the concept of OER, who developed open resources for the first time as part of a UK funded project, [CPD4HE](#). This work was located within an ongoing national OER programme, which has stimulated development of OERs and research into related issues such as motivators and barriers, usage and impact.

Following a description of the broader context for the CPD4HE project and a discussion of research methodology, we will consider the experiences and attitudes of the novice academic OER developers. In particular we will address themes including educational values, academic identity, authorship, approaches to IPR and awareness raising. We will also explore the potential implications of this work and the extent to which creating OERs has transformed practice for this group.

**Keywords:** OER, Open Education, innovation, impact, academic values, identity

## **Background**

### **Development and Research Context**

This work sits within a tradition of exploring the impact of technology-related innovations in educational contexts and in workplaces more generally. Open education development in the UK has largely focused on resources (OERs). Online repositories associated with national organisations (e.g. [JORUM](#)), disciplinary networks (e.g. Humbox, LORO) and institutions (eg OpenLearn) have been populated with learning materials through successive waves of projects. Resources in these repositories are becoming more accessible though better search tools, use of consistent technical standards and clearer (Creative Commons) licensing. These developments have been supported, by funders such as JISC (Joint Information Systems Committee) and the Higher Education Academy, through several phases. Initially, the emphasis was on creating, sharing and archiving materials. Increasingly there is a focus on practices and on understanding how OERs are found and used (JISC 2011) and how to embed open education in university work.

Research has supported this development, and has been focused on what motivates institutions and individuals to engage with open education practices, the barriers to such engagement, usage and the impact of OER. In relation to impact on practices, Lane and McAndrew (2010), writing about the UK Open University's OpenLearn initiative, compare the impact of OER with that of its precursor, Re-usable Learning Objects (RLOs). They note that OERs have gained greater acceptance into practice than the more technologically led RLOs. They suggest that this is because there are fewer barriers to experimentation by teachers, which enables a participatory, action research approach.

Bates *et al.* (2007) and more recently Rolfe (2012) conducted surveys of university teacher attitudes and feelings about open release of teaching materials. Bates *et al.* focus on the deposit of materials and seek to identify areas of concern to teachers related to the sharing of their teaching materials. They found that most respondents wished to place some restrictions on the rights of those who accessed their materials – although there was considerable

variation in specifying these restrictions. Concerns about intellectual property and copyright can be barriers to both release and re-use of resources.

The JISC OER Impact Study (Masterman *et al.* 2011) is particularly relevant to this research, in terms of both findings and methodology. It considers the use of OER from the perspective of institutions, teachers and learners. The authors suggest that university teachers still tend to create the majority of their resources themselves. Whilst the concept of OER and the large repositories are not necessarily familiar to teachers, it is common for them to draw materials – particularly images or multimedia – from the Internet. Similarly, whilst formal release of materials as open educational resources is still not widespread, much informal, local sharing takes place. Like Coughlan and Perryman (2011), they observe disciplinary differences related to using open resources. They also identify a relationship between a teacher's individual educational values and disposition to engage with open education practices, a correlation which would seem to be borne out by our research. Finally, and highly relevant to this study, some of their interview data hints at the transformative potential of engagement with open education.

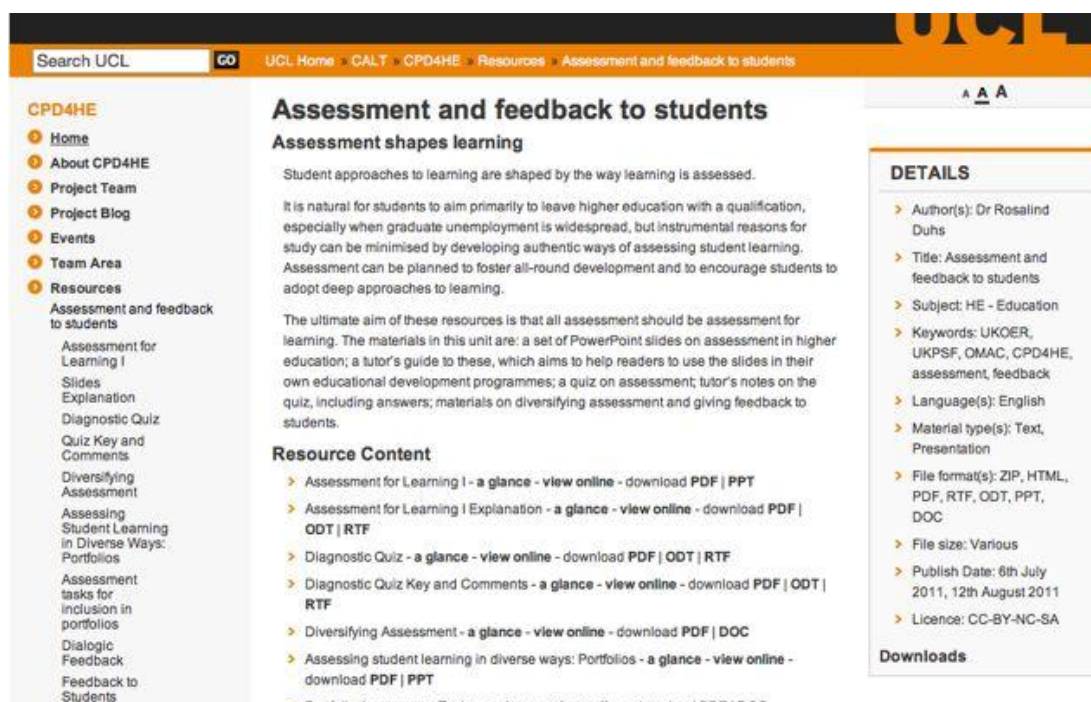
To broaden the context still further, this research sits within a tradition of studies examining the impact of technology-related innovations on working practices. From Grudin's (1991a and b) consideration of the factors that encourage acceptance of new technologies, through early 1990s workplace studies such as the work of Luff *et al.* on practices around paper and screen in a London Underground control room, a similar message emerges. People's working practices are complex, not easy to document, evolve with the new technologies and influence the way that the technologies evolve; they can really only be understood by engaging fully with the users and drawing them into design and development. These researchers employ a portfolio of predominantly qualitative enquiry methods, particularly workshops, focus groups, interviews, observation and document study.

### **Project context**

CPD4HE, the project on which our research is focused, was funded by the UKOER programme, and it entailed a group of academics collaborating with technical and rights experts to create around 300 study hours of open educational resources (CPD4HE, <http://www.ucl.ac.uk/calt/cpd4he/>). The materials originated in a selection of masters level courses on teaching and learning in higher education. None of the academics involved had previously had any active involvement with the OER or OpenCourseWare movement. The institutional context was a research-intensive university with its own repository for research outputs but no equivalent for learning resources or scholarly publications about teaching and learning.

The working process devised for the project gave individual teachers responsibility for developing OERs on one or more of the topics that they taught. After consultation with the project's rights and licensing adviser, the teacher-developers made their own decisions about whether to include third party material and, if necessary, negotiated permission to use it. They also worked within guidelines on technical standards, with backup from the project technical specialist.

In addition to the learning materials themselves, guidance for potential users was provided in the form of audio recordings in which the teacher-developers explained what they felt they wanted resource users to know (see <http://www.ucl.ac.uk/calt/cpd4he/resources/>). These recordings took various forms, including individual teacher commentary, two teachers talking through a PowerPoint presentation and more formal interviews. The resources were released both in JORUM and on the project website (Figure 1)



**Figure 1. Sample resource page - CPD4HE project**

It is important to observe that while the development work was largely an individual endeavour, there were, nonetheless, many opportunities to jointly explore issues surrounding open education. For example, beyond the writing of resources, project participants also took part in collective activities such as workshops, webinars, seminars, social networking, meetings and informal discussions. So while they were producing materials, they were also engaged in larger conversations, with other project team members, institutional colleagues and those across the HE sector more broadly. These interactions gave individuals a chance to engage in dialogue about issues such as IPR and licensing more broadly.

### Methods and approaches

In order to learn more about the teachers' experience of creating and working with OERs, we collected data from several different sources. These sources included:

- teachers' audio-recorded commentaries on their materials as they developed the final resources for the project;
- extended semi-structured, post-project interviews conducted approximately 6 months after the end of the project;
- action-reflection cycles with members of the project team, with reflection captured both in writing and conversation, during and following the project.<sup>17</sup>

The data were collected, and, in the case of the interviews, transcribed. Emergent themes from the data were identified by the authors, who then produced categories and used these to further interrogate and analyse the data.

### Reflective Questions

We arrived at an initial set of questions by reflecting on our own experiences as OER teacher-developers in the CPD4HE project. The questions addressed issues of academic identity, professional values, teaching practice, writing for an unknown audience and attitudes towards sharing:

<sup>17</sup> Data collection for this work is ongoing and we anticipate having further results to report at the conference.

1. In designing learning activities, have you become more aware of open resources that you can use?
2. Do you design your materials with a view to sharing them openly (e.g. paying attention to copyright of third party materials)?
3. Has there been any other impact on your working practices?
4. When developing your resource, how did you conceptualise audience? What is the impact of not knowing an audience?
5. Do you have any thoughts about the learners and their possible experiences with these materials?
6. What are your attitudes in terms of creative commons licensing of work you created? Did your attitudes towards licensing change during the process?
7. Did your sense of identity as academic authors/producers shift during the work?
8. Does this sort of work accord with your broader educational values? Has it shaped your values at all?
9. Is there anything else you would like to discuss about the creation of OERs and participation in an open education project?

These questions were discussed in two interviews with teachers who had worked on the earlier project. One of the authors led each conversation; all four had developed OERs in the CPD4HE project. Conversations lasted approximately half an hour, were recorded, transcribed and analysed in order to identify themes and trends.

## **Themes**

In this section, we look at five particular themes that emerged from the data: OERs and teacher identity; OERs as texts/publications; values; IPR and awareness raising.

### **OERs and teaching identity: ‘staking a claim’**

One of the most potent observations was the extent to which the writing of OERs was likened to the staking of a claim on the teaching landscape: ‘I felt that I had ... sort of staked a little bit of a claim in some of those areas [...]’ said P1, who went on to say that by releasing OERs she relocated her teaching practice from a private to a public domain: “teaching is very, very private and it was making it public and it was in a public domain and, you know, it’s got my name on it ...” [P1].

Similarly, P2 mentioned her pleasure and excitement in putting her work ‘out there’, and, as we discuss further below, felt that the release of OERs ‘protected’ her from having her work wrongly ‘claimed’ by others.

When reflecting further on this idea of staking a claim, P1 spoke of being able capture the ephemeral nature of teaching through OERs:

teaching is very ephemeral. You know, there are the people who are in the room and then they’re gone..... you can’t show it to anyone. You can’t say ‘hey, there was a really great workshop yesterday.’ It’s gone. [But with OERs], you’ve actually got something to show for all your ideas about the teaching’ ‘my hidden practice is made public’. P1

So developing and releasing OERs would seem to be a way of establishing a teaching identity and of articulating aspects of a practice that is often hidden.

## **OERs as text/publications**

For most of the participants, there was a sense of wanting to identify the resources as texts and themselves as authors (as opposed to designers). P1 strongly identified the materials as 'textual' and herself as an author: 'they are very much texts and texts need to be written'. She also was keen to list them as official publications, even if there was some uncertainty about how to describe them:

I had to write my homepage for the web, so you have to put all your selected publications and your conference publications and I didn't know exactly where to put it [list of OERs], but I thought '*I'm putting on my OERs ... because I'm really proud of them.*' . So I think it was under 'projects you've been involved with'. I put them in there and I've got links to all three of them on my home page and I've also got it in my [email] signature line. [P1]

P2 spoke repeatedly about viewing herself as an 'academic author' when she wrote OERs. She said that she would 'definitely' list OERs on her cv and that she actually felt more 'proud' of her OERs than of her PhD.

Whereas it was clear that P1, P2 and P4 had seen the OERs as finished, polished texts, albeit ones that would almost certainly developed in new ways by other teachers, P3 had less of a sense of the OERs as publications: 'I didn't feel too much pressure to get my materials to a complete and finished state. I felt I was putting out ideas....'. In her interview commentary on the materials, she states her pedagogical preference for creating small, idea-centred units:

'there's a core of materials here that is from a single workshop and I think even though other activities have been added, they could be used as a package. However as a teacher, I don't think I would be that likely to take up a complete programme that someone else had designed, I'd be much more likely to take a single idea or a single activity and adapt it for my own uses. So although you can download the whole package, most of the materials are split up into quite small units. '(P3)

These teachers' sense of having authored a text is interesting in view of the fact that the Creative Commons licenses they opted to use allowed users to change these texts.

## **OERs and values**

There was a sense of the Open Education movement espousing a certain set of values (sharing, community participation, benefit of a common good) that all of the project participants alluded to. Although the precise 'values' of Open Education were not specifically articulated, there was a feeling amongst participants that their personal and professional values were aligned to the ideals behind OER:

It [Open Education] just seems a very natural extension of the fact that through my whole teaching career if anybody had wanted to use my handbook or teaching materials or anything, they'd ask me and I'd always say 'yes'. And that's a completely natural, normal part of practice: you share your stuff with your colleagues, and so I think Creative Commons ... OER is just a word for doing that in a digital domain... it's the same thing - you share it. (P1)

P2 mentioned that she, too, had always been happy to share materials, but now, in contrast to a colleague who always copyrights his work, she uses CC licenses to publicly demonstrate her values: 'I have a colleague who always puts a copyright notice on every slide, so I've started putting the CC logo on my slides. It has had an impact on me.' (P2)

The notion of being part of a larger movement struck a chord with P3 who liked the ‘sense of being part of a big movement, a worldwide movement.’

For all of the teachers with whom we spoke, and for ourselves, Open Education was situated within a general set of values that we felt we shared, and participating in the design and release of OERs articulated more publicly our embrace of those values. This predisposition towards the perceived values represented by Open Education movement (sharing, collaboration, etc.) accords with the findings of Masterman et al, 2011 who suggest that such an alignment of values is a prerequisite for both the individual and institutional uptake of OER.

### **OER and IPR**

Related to a discussion of values is the idea of IPR and acknowledgment. One issue that recurs in the burgeoning literature on OERs is the concern that authors of texts and materials are ‘giving away’ their work and relinquishing their rights over it. P2 and P1, however, felt strongly that, once into the project, any concerns about their intellectual ownership of their materials were placated. P2 spoke of how, for particular reasons, she had been growing increasingly protective of her teaching materials, and, how working on the project had made her ‘relax’ about IPR. Likewise, P1, suggested that releasing her texts under a CC licence offered her ‘protection’ from potential copyright theft, which she had brushed up against:

“it seems the best protection against the exploitation of your work without acknowledgement and without permission is to put it out there, publicly, but to ask for the attribution and not for the commercial exploitation.”

Both P1 and P2 felt that the value of the texts or materials lay in the context in which they were used; the teaching experience was far more than just ‘materials’. Indeed, the re-use of an academic’s materials does not diminish their individual or institutional ‘currency’ and it may well enhance it. As P1 argued

The analogy with a restaurant is that River Cafe [London restaurant] have published a cookbook with their recipes... it has not stopped them exploiting that intellectual property right if you like by cooking the meals and having people come to the restaurant; I’m sure it hasn’t damaged that at all ... it’s enhanced it. And that’s how I see OERs: You’re giving away the recipes, but people will still come to you .’

Ultimately, for the project as a whole, licensing was still a complex issue. But it was clear that for the participants in this study, they had addressed copyright and IPR both in terms of their own work and felt that releasing OERs reinforced their position as authors of teaching materials.

### **OERs as awareness raising**

Finally, all participants felt that their awareness of licensing, open resources, and their understanding of the effort required in creating ‘good’ OERs had been enhanced. No members of the project team had prior experience with OERs. Yet, since participating in the project, they have all actively sought OERs to incorporate into their teaching and professional practice. Additionally, all indicated that they regard it as a normal part of practice, now, to make texts and resources available, where possible, using Creative Commons licensing. P1 mentioned that she now includes the release of OERs as a standard ‘output’ on any grant applications. The authors are currently leading a follow-on project from CPD4HE, which involves OER policy and the development of an e-book to be released as an OER.

## Conclusion

As suggested above, it would seem that the act of creating the OERs was transformative in several ways. Firstly, it helped academics articulate an identity as teachers by enabling them to ‘stake a claim’ for their teaching or put it ‘out there’. The releasing of an OER helped to make the private act of teaching more public.

It also emerged that most of the project team viewed this work as comparable to the authoring of other academic texts and they intended to list their OERs in professional domains such as websites, email signatures and cvs.

There was an alignment between the perceived values underpinning the Open Education movement and the personal and professional values of the project participants. Creating OERs and adopting Creative Commons licensing was a way for participants to overtly signal the embrace of these values.

Finally, having become aware of OERs through this project, all participants have continued to seek out and use OERs in their practice.

It is clear from what they say about the experience that developing their teaching materials as OERs has changed both the thinking and the behaviour of this small group of academics. Now that the embedding of OER in institutions is recognized as a priority we would like to investigate how creating OERs can be catalyst for practice-change, with larger numbers, across disciplines. We are beginning work on a follow-up project, [Sustainable Texts and Disciplinary Conversations](#) in which we will work with an institutional “OER champion” to engage academics in contributing their narratives about teaching to an e-book. Using similar methods to those described here, we will also explore the impact on those who participate.

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# **The OER University: from vision to reality**

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## **Abstract**

According to UNESCO (Altbach et al, 2009), there is a demand for over 100 million places in higher education worldwide that will never be met by existing provision, due to capacity constraints on the part of higher education institutions (HEIs) and fees that are unaffordable for the learners. The Open Educational Resources University (OERu), an ambitious initiative aimed at meeting this need, is a partnership of HEIs around the world, collaborating to provide formal assessment and accreditation for learners studying independently from open educational resources (OERs). Fifteen institutions, from New Zealand, Australia, Canada, the USA, India and South Africa, have joined the OERu as “anchor partners”. These institutions are in the process of preparing to implement the OERu concept, originally proposed by Taylor (2007) in terms of a “parallel learning universe”, in a pilot planned to start in the second half of 2012.

TOUCANS is a research project based at the University of Leicester, in which SCORE fellow, Gabi Witthaus, is investigating the OERu and its potential future take-up in the UK higher education (HE) sector. The project runs from September 2011 to June 2012. In this paper, the first phase of the research, involving interviews with individuals from the anchor partner institutions, is reported on. Respondents commented on the anticipated target audience for the OERu pilot, the institutional processes for making curriculum decisions, options under consideration for approaches to assessment, ideas about how accreditation and credit transfer might be handled, and the nature of support that will be provided for OERu students. Business models for participating in the OERu were also discussed, as were the various institutional and personal motivations for participating in the OERu. Based on these interviews, it is clear that there is a strong personal commitment from key individuals in the anchor partner institutions to making the OERu concept work, and a great deal of effort is currently under way to prepare the ground for the OERu pilot. This paper reports on findings from the research so far, which suggest that the OERu might well provide a range of useful models for collaboration around OERs to enable access to higher education on a significant scale in the future.

## **Keywords**

OER University

OERu

open accreditation

University of Leicester

## **Introduction**

The OERu started out as a loose network of interested individuals from several HEIs who felt a personal mission to operationalise the idea of enabling universal access to higher education through collaboration around OERs. In February 2011, these individuals met at Dunedin in New Zealand to flesh out their ideas and generate a concrete plan of action. In November 2011, the OERu was officially launched, with 15 “anchor partners” (13 teaching institutions and two non-teaching institutions) having made the commitment to test the OERu concept. The communication hub for the development of the OERu is a wiki ([www.wikieducator.org/oeru](http://www.wikieducator.org/oeru)), and all decisions and processes are continuously recorded there in a deliberately open and transparent way.

[www.le.ac.uk/toucans](http://www.le.ac.uk/toucans)), one of several OER projects at the University of Leicester, is a SCORE fellowship, funded by the Higher Education Funding Council for England, and conducted in partnership with the Open University. The aim of the project is to investigate the OERu as a model of collaboration around OERs to enable greater access to higher education. In the first phase of the project (Sept 2011 to Feb 2012), data has been gathered from the anchor partners to identify a range of approaches that institutions are considering taking in their efforts to achieve the OERu's mission. In the second phase (March-June 2012), UK stakeholders will be asked to consider the relevance of these options and frameworks, as well as the broader vision of the OERu, to the UK HE sector.

### **Research methods**

TOUCANS uses qualitative research methods. So far, 13 people, representing 11 of the teaching institutions and both the non-teaching institutions in the OERu anchor partner consortium, have participated in semi-structured interviews. It should be noted that, in many cases, interviewees were sharing their knowledge of embryonic developments within their institutions, and that not all interviewees had been involved in all aspects of their institution's OERu work to date. In some cases, they were also speaking in their personal capacities as scholars rather than as representatives of their institutions. The findings presented in this paper therefore reflect some of the early discussions and debates around implementation of the OERu concept, and should not be seen as final decisions or policy directions already determined by the institutions concerned, except where specifically stated as such.

In order to begin to describe the diverse array of models and options under consideration for implementation of the OERu concept, interviewees were asked to comment on the following questions from their institutions' perspectives where possible, or from their personal perspectives where no clear-cut decisions had been made by their institutions:

1. Who are the OERu students likely to be?
2. How are curriculum decisions being made?
3. What options are emerging for OERu assessment?
4. How are OERu anchor partners planning to handle accreditation and credit transfer?
5. What kind of support will OERu students receive?
6. What is the business model for participating in the OERu?
7. Why did your institution join the OERu?

The findings from the interviews are presented in the following sections of this paper.

#### **1. Who are the OERu students likely to be?**

Studies conducted by UNESCO (Altbach et al, 2009) indicate that there are over 100 million adults globally who are eligible to enrol for higher education, but cannot afford to do so. For some of the people interviewed, this as-yet undefined, mass-scale international audience was the target population for their institution's OERu offerings. Others had a more defined and localized audience in mind. For example, a major focus for the US-based institutions was the estimated 23 million adults within the US alone (US Department of Education, 2011, p22) who are "underserved" in terms of higher education, including large numbers of work-based learners who could be reached via partnerships with employers. Within New Zealand, Australia, Canada and South Africa, there was also a high degree of commitment to using the OERu to reach out to local communities who currently have little or no access to higher education.

There was also mention of the OERu potentially playing a role in increasing the existing customer base of some institutions. For example, in the US- and Canada-based institutions where recognition of prior learning (RPL, also known by the term Prior Learning

Accreditation and Recognition, or PLAR) is well-established, the OERu may well provide the structure and support needed for RPL applicants to submit a higher quality portfolio, thereby increasing their chances of success. There is also curiosity within some institutions to see whether the OERu might lure potential fee-paying students who want to “try out” formal education without the large financial commitment that is traditionally required. Such students might later enrol on a fee-paying basis for courses that are not (yet) offered via the OERu.

## **2. How are curriculum decisions being made?**

The curriculum is probably the least contentious of all issues under discussion within the OERu consortium, since it was the concept of offering services around an OER-based curriculum that united all the partners in the first place. However, although there is a wealth of existing OERs already available on the Web, additional work needs to be done to make these resources suitable for OERu students, for example, including information about learning pathways and assessment requirements, with reference to specific courses or programmes and related assessment opportunities provided by the relevant anchor partners.

Bearing this need in mind, the participating institutions have three choices: they can use OERs produced by their own institution; they can use OERs produced in collaboration with other anchor partners; or they can use OERs produced elsewhere. Most institutions have gone for the first or second option for the pilot; however, a few are considering using OERs produced by another OER initiative, the Saylor Foundation (<http://www.saylor.org/>) – an independent, non-profit organisation that provides OERs written by “credentialed professors” (Saylor Foundation, 2012). This has led to some rather intense debates within institutions about the acceptability of offering a course that has not gone through the usual institutional quality assurance and validation processes. From the point of view of the OERu philosophy, it could be said that this argument is neither here nor there, since students will be accredited according to their performance in the (institutionally-approved) assessment, regardless of the learning materials they used to achieve that competence. However, for some stakeholders in universities that are used to operating in traditional ways, using externally produced OERs may be a step too far for them.

In this research, the interviews provided some indicative evidence of the paradigm shift that the OERu is generating within higher education. At the core of the OERu is the notion that the disaggregation of teaching, content and assessment – traditionally the three pillars of an educational institution – will enable access to higher education on a vastly greater scale than is currently possible, and that this disaggregation is now possible because of the existence of openly licensed content, combined with a global network of willing institutional partners. As some interviewees pointed out, this requires a totally new mindset on the part of all stakeholders – not least senior management and the Marketing Department of participating institutions. (See section 6 for further discussion.)

## **3. What options are emerging for OERu assessment?**

Some of the OERu anchor partners have very established RPL programmes, or work in partnership with other organisations that handle RPL for them (such as CAEL – Council for Adult and Experiential Learning – in the USA) and so RPL is one obvious approach to assessment within the OERu. However, it was also clear from the interviews that the concept of RPL was not very well defined in some institutions. Otago Polytechnic’s (2011) RPL policy, which has been published online under an open licence, was mentioned by several respondents as a benchmark and potential model for those institutions that do not yet have well-developed policies in this regard.

Another approach to assessment was the notion of “challenge exams”, which involves offering students the option to sign up for an exam without having enrolled in the course. This

is already established at some institutions such as Athabasca University, but is not widely taken up. Offering challenge exams on a large scale will therefore be experimental, even for those institutions with some experience. The option for offering students monitored, at-home exams is also a potential future possibility, and with technological advances this is not outside the bounds of imagination. However, the question of identity validation is receiving serious attention within the anchor partners, and it is unlikely that any form of remote assessment will be prioritized for the OERu until these concerns can be resolved.

Another form of assessment being considered by the anchor partners is standard assignments or essays, possibly identical to the ones being used for fee-paying students. Some institutions are also considering offering work-based assessment, in partnership with employers.

#### **4. How are OERu anchor partners planning to handle accreditation and credit transfer?**

Answers to this question ranged from fairly open approaches to fairly restrictive ones. Some institutions allow a majority of credits to be transferred from other institutions. For example, in some cases, students need only 32 out of 128 credits to come from the accrediting institution. In other cases, up to 80% of the learning outcomes (in a course done at another institution) need to be identical to outcomes in a course offered by the accrediting institution. Those institutions with more restrictive credit transfer policies are engaged in internal discussions about this, and it is possible that one impact of participating in the OERu will be the revision of such policies.

#### **5. What kind of support will OERu students receive?**

This question elicited a wide range of thoughtful and often passionately-held views. Considering that the OERu was set up as a low-cost, no-frills alternative to traditional higher education, the ideal OERu learner was summed up in the words of one person as being “a self-contained student who is going to resolutely keep persevering.” In other words, someone who does not make great demands on the institution’s resources. It was recognized by all, however, that students would need *some* form of support.

As a starting point, the OERu partners have agreed on the importance of having support embedded in the materials, at the very least in terms of recommended learning pathways, reflection activities, assignment writing guidelines, and clear, transparent information about the nature of the assessment process.

A further solution under consideration is the concept of “Academic Volunteers International” (AVIs). AVIs may include retired academics, existing tutors who have spare time and, in time to come, OERu graduates who wanted to “give something back” to the network. It is generally agreed that these volunteers need not be subject matter experts, but should be able to assist students with digital literacy issues, finding their way around the resources and so on. The question as to how scalable, and how sustainable, this volunteer approach will be remains open.

While there is no intention, at this stage, to have a virtual learning environment for the OERu as a whole, most of the institutions are considering ways of providing platforms for student-driven social networking, including the possibility of using externally created open platforms such as OpenStudy (<http://openstudy.com/>) or the OU’s OpenLearn (<http://openlearn.open.ac.uk/>). The open source software community was cited as a model for peer support – with recognition that participation in online help forums requires a level of digital literacy which cannot be assumed of all OERu learners.

Some interviewees see opportunities to use existing resources, either within their institutions or within their regions, for student support. For example, some institutions already have

RPL/PLAR mentors, who are employed to assist applicants in assembling their portfolios, and these mentors could offer their services on a wider scale for the usual PLAR fee, which is set at a fraction of the cost of full enrolment for learners. In some cases, there are also government-funded community outreach centres offering literacy and other skills development programmes to local communities, and these centres could potentially support OERu learners. In the case of workplace-based OERu learners, there would also be an existing support structure involving managers and mentors. Again, it is difficult to predict how sustainable such support mechanisms might be when working on a mass scale.

One option that was tentatively suggested by a few of the interviewees was the possibility of including OERu students in the forums (and possibly even classrooms) that have been set up for fee-paying students. However, it was noted that this might raise complex issues – including the possibility that the “regular” students might begin to wonder why they are paying fees. Other potentially contentious suggestions were 1) that OERu students might be willing to pay an occasional “fee-for-service”, for example, a one-to-one session with a tutor to help them with an assignment, and 2) that an institution might “cap” the number of OERu students on a given course. It was recognized that these ideas ran somewhat counter to the spirit of the OERu, but at this stage, all options that might contribute to the viability of the OERu from an institutional point of view are up for discussion.

There is also some talk of creating automated support for learners, for example, building up an FAQ database to help learners with predictable questions, or providing targeted information to specific learners based on learning analytics. (In a workshop at the Open University in February 2012, Andrew Law, Director of Multi-Platform Broadcasting at the OU, reported that, in a study into learner perceptions of automatically generated feedback, students felt genuinely excited about the feedback they were receiving. One even said, “Now I know that I am not just a number any more!”) This is clearly an area where we can expect to see developments in the future, and its impact on the OERu is likely to be substantial.

## **6. What is the business model for participating in the OERu?**

It was agreed at the launch meeting of the OERu in November 2011 that obtaining a credential via the OERu should cost students a maximum of 25% of the usual fees. It was also suggested that OERu courses should constitute less than 0.5% of an institution’s total offerings. This severely limits the financial risk for participating institutions – while also highlighting the importance of collaboration in order to be able to ultimately provide a substantial range and number of courses and programmes for OERu learners.

Because of this low-risk approach, interviewees indicated that the OERu was not perceived as a threat to their business models. Some said they planned to cross-subsidise from their established, successful programmes to fund the OERu development and implementation work. Some said they would build on existing, self-sustaining processes (for example, the RPL service offered by some North American institutions, mentioned above). Some expected to receive government funding or foundation sponsorship for their OERu work. In some cases, OERu learners are likely to be able to receive government grants.

In many cases, there is also an explicit or implicit expectation that the OERu will lead to greater enrolment numbers in the long run. This is expected to occur not only as a result of the greater Web presence and newsworthiness of their participation in the OERu, but also as a result of more students experimenting with formal higher education through the OERu, and then making the commitment to study further. This idea of the OERu as a stepping stone into formal, fee-paying higher education is, of course, only viable to the extent that the OERu itself remains small and limited in its scope of offerings. One can imagine a future where more and more institutions join the OERu, providing ever more courses and credentials,

thereby eventually eliminating the need for OERu students (or any students, for that matter), to pay fees at all. Should this transpire, the paradigm shift will be complete, and radical new business models for higher education will certainly be needed.

## **7. Why did your institution join the OERu?**

Without exception, all the interviewees stated that curiosity was a major motivation, and several mentioned a desire to “dip a toe in the water” – experimenting with the power of collaboration around OERs to enable access to higher education on a massive scale – and watching closely to see what would transpire. Several mentioned the importance of the higher education sector finding new models for sustainable education practice. All the individuals I spoke to indicated a strong personal desire to, as one person put it, “be of service to the world”. This was in line with their institutions’, and often also governments’, social inclusion and community service or outreach agendas.

For some, it was a deeply political personal mission too, perhaps most eloquently summed up in the words of one interviewee, who said, “We are fighting off the dogs that want to keep knowledge a privilege”.

There was also the desire to use the OERu as a platform to meet workplace needs on a large scale, in partnership with employers.

There was also a perception amongst some that the OERu would be a powerful marketing platform – positioning the participating institutions as world leaders in a whole new phase in the history of higher education.

Last, but by no means least, the collaboration facilitated by the OERu played an essential role in influencing institutions to participate. Collaboration enabled the obvious sharing of resources (as one person put it, “We put in one course, and we get seven out”), as well as benchmarking practice against other institutions, opportunities for staff development through participating in discussion forums, efficiency, policy sharing, and quality improvement. The OERu also provided a way of reducing perceived isolation – not only institutionally but regionally. One person said, “Our country is pretty darned isolated. It’s time for us to join the world” (referring, incidentally, to the USA).

## **Conclusion**

From the data gathered so far, it is clear that, in the space of just over a year, the OERu has grown from a bold vision to an imminent reality. It has grown, not of its own accord, but as a result of the dedication and efforts of its founder members. Research participants indicated that achieving the OERu’s ambitious, humanitarian vision of vastly increased access to higher education requires a commitment to collaborative effort and openness towards new ways of thinking. Some of them stressed that the key to success lay in an ability to imagine a future in which the traditional pillars of education provision – content, instruction and assessment – are disaggregated. As the anchor partner institutions prepare to pilot this radical new approach to higher education, they are experimenting with options and frameworks for curriculum design and delivery, assessment, accreditation and student support that may be useful for other institutions seeking to participate in this, or similar, projects aimed at widening access on a massive scale within the higher education sector.

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# **The Open Education Evidence Hub: A Collective Intelligence Tool for Evidence Based Policy**

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## **Abstract**

This paper considers a Collective Intelligence approach to collating the evidence needed to support policy in open education. A tool, called the OER Evidence Hub, provides an infrastructure for the OER community to collect examples and data of OER effectiveness and use and then supports the community and others such as policy makers with a community-generated knowledge base to help decision making. We describe the Evidence Hub concept and features, present figures on user engagement, and discuss the results of initial user testing. We also show through examples how content can be seeded into the OER Evidence Hub, and illustrate the way in which it has captured exemplars identified by a particular community, the OER Advocacy group. Finally we discuss general issues and future strategies for building effective Collective Intelligence platforms for Open Education and other purposes.

## **Introduction**

In this paper we present work developed within a specific project (OLnet) which aims to support the Open Educational Resource (OER) Community.

Our goal is to co-design the people, processes and platforms to support and enable more effective Collective Intelligence (CI) for the OER movement. We propose an approach which builds on the mechanisms already in place by which we share insights and experiences, but adds a layer to structure and index that knowledge sharing so that it is not locked in minds or documents. An important lesson from learning sciences is that sensemaking and learning occur through discourse: the sharing and critiquing of ideas in ways that both affirm and challenge. Central to this is the presence of potentially conflicting viewpoints. Our approach to CI therefore focuses on *scaffolding interpretive discourse and on alerting users to when there are both agreements and differences in opinion*. Therefore collective Intelligence for OER sustainability starts with capturing the hidden knowledge of the OER movement and leveraging it so that can be re-used and put in value. We build on the stance that this knowledge is usually hidden in the minds and thinking of OER users (learners and teachers), advocates, practitioners and funders, or it is distributed in many virtual or physical “places” and therefore difficult to retrieve. We therefore need better ways to capture such thinking and connect and scaffold it to develop the Collective Intelligence of the OER movement. CI then provides a suitable infrastructure to support the OER movement to tackle the many challenges it faces.

In this paper we present the way previous concepts have been articulated and developed into the Evidence Hub, a prototype tool to map the learners, researchers and practitioners’ thinking, knowledge and evidence of OER effectiveness and make those visible and debatable, thus building what we termed Contested Collective Intelligence (De Liddo & Buckingham Shum 2010, De Liddo & al 2012) around OER. In section two we describe the main features and content types of the Evidence Hub, focusing on the description of key challenges and emerging OER themes. In section three we describe some facts on the EH history and some figures on user engagement. In section four we then discuss the results of initial user testing and how they have affected user interface design. Finally in section five we show how content can be seeded into the OER Evidence Hub, and capture exemplars of EH content identified by a particular community, the OER Advocacy group. We conclude by



reflecting on issues and future strategies to inform the development of collective intelligence platforms for Open Education (section 6).

### **The Evidence Hub for Open Education**

The Evidence Hub (EH) for Open Education has been developed within the Open Learning Network project (OLnet<sup>18</sup>) and it aims to provide an environment to systematically interrogate the Open Education movement on what are the people, projects, organizations, key challenges, issues, solutions, claims and evidence that scaffold the movement. The Site is a space to collaboratively build an evidence hub that represents and maps the collective knowledge of the Open Education community.

Ultimately the Evidence Hub seeks to provide researchers and practitioners in Open Education with a dynamic and living map of where the Open Education movement is and where it is heading. To do so the Evidence Hub provides OER scholars, researchers and practitioners with an environment where they can put the key entities ‘on the map’ – literally, through the provision of a range of different visualizations to:

- Explore and debate the key challenges for the Open Educational movement. The OER community can link these challenges to issues, claims, organisations and solutions they are concerned with. Moreover, key challenges can be promoted or demoted, so that community can express how important they consider each challenge to be.
- Add new projects and organizations to the OER network. Members of the OER community can add a description of their project, including geographical location and website and then use the location map and theme map view to explore other organizations.
- new issues and questions can be posted, explored and discussed,
- new solutions can be proposed to tackle the major challenges facing Open Education,
- relevant evidence and Web resources for the OER community can be shared to contribute to the evidence base of OER impact on teaching and learning,
- new claims of OER effectiveness can be made and investigated, that are informed by the OER

It is out of the scope of this paper to provide an exhaustive description of the whole EH features, nonetheless in the following we present some screenshots showing the different maps that the Evidence hub brings into the OER debate.

### ***Key Challenges for the OER movement***

Twelve key challenges for the OER movement have been identified through analysis of the data gathered in the Evidence Hub and by conducting a consultation with leading OER researchers and OER advocates.

These key challenges form a good starting point for exploring the evidence in the Hub and aim to allow the community to link these challenges to issues, claims, organisations and solutions they may be tackling in their main OER research or practice. The Hub also allows the existing key challenges to be promoted or demoted, so that community can express how important they consider each challenge to be. The 12 key challenges as currently expressed in the EH are shown below. (More information on the process of consultation conducted to distil those challenges can be found at <http://www.olnet.org/node/639>.)

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<sup>18</sup> For more info on the OLnet project please visit the OLnet website at [www.olnet.org](http://www.olnet.org)

- ❓ Who and how to create new appropriate Assessment/Evaluation models and practices for OER?
- ❓ What are the costs and benefits of using OER in teaching?
- ❓ What can be done to improve OER Sustainability?
- ❓ How can we improve the value and impact of OER Research?
- ❓ What Technologies & Infrastructure are needed/in place to help the OER movement?
- ❓ What Institutional Policies are needed/in place to promote OER?
- ❓ What are the best ways to Promote and Advocate educational methods which use OERs?
- ❓ How do we create the right culture of teaching and learning to improve OER Adoption?
- ❓ What evidence is there of Use (and Re-Use) of OER?
- ❓ What are the issues surrounding Copyright and Licensing, and how can they be overcome?
- ❓ How do we ensure OER is of high Quality?
- ❓ How can we improve Access to OER?

Key Challenges for the OER movement.

### ***Emerging OER themes***

All the EH content (people, projects, organizations, key challenges, issues, solutions, claims and evidence) has been categorized by following a taxonomy of 18 OER themes. This categorisation results from an analysis of 125 Hewlett Grantee Reports. Four OLnet researchers<sup>19</sup> analysed the reports to extract key messages and identifying the main OER themes emerging during the analysis. The projects represent the major investment by The William and Flora Hewlett in the last 10 years, and therefore can be considered as reasonable sample data to capture the evolution of the interests and issues of the OER community in the last decade.

The final list of 18 themes is the result of a post-analysis effort, conducted by the OLnet researchers, to group the full list of themes into higher level categories.

The classification of content by OER themes allows users to explore the Evidence Hub by topic of interest (i.e. OER policy, reuse, access etc.) A list of the main themes can be found as tag cloud at [ci.olnet.org](http://ci.olnet.org) in the EH home page (Fig. 1).

**Access Adoption of OER Community Building**  
**Content Creation Copyright and Licensing**  
 Deeper Learning Discoverability Dissemination and Awareness  
**Networks and Sharing OER Research Ongoing support**  
**Policy Reuse of OER Sustainability**  
**Teaching and Learning Tools and Technologies**  
 Training Use of OER

Figure 1: Main OER Themes

Each OER theme can then be explored. The “explore view” of a theme shows all the related Organization/Projects, key challenges, issues, solutions, claims and evidence. Moreover it shows the people following that OER theme and the Users’ comments to the theme page (Fig.2).

<sup>19</sup> We thank Dr. Panagiota Alevizou, Dr. Andreia Inamorato dos Santos, Dr. Elpida Markiyanni and Dr. Tina Wilson which conducted the content analysis of the Hewlett Grantee Reports.

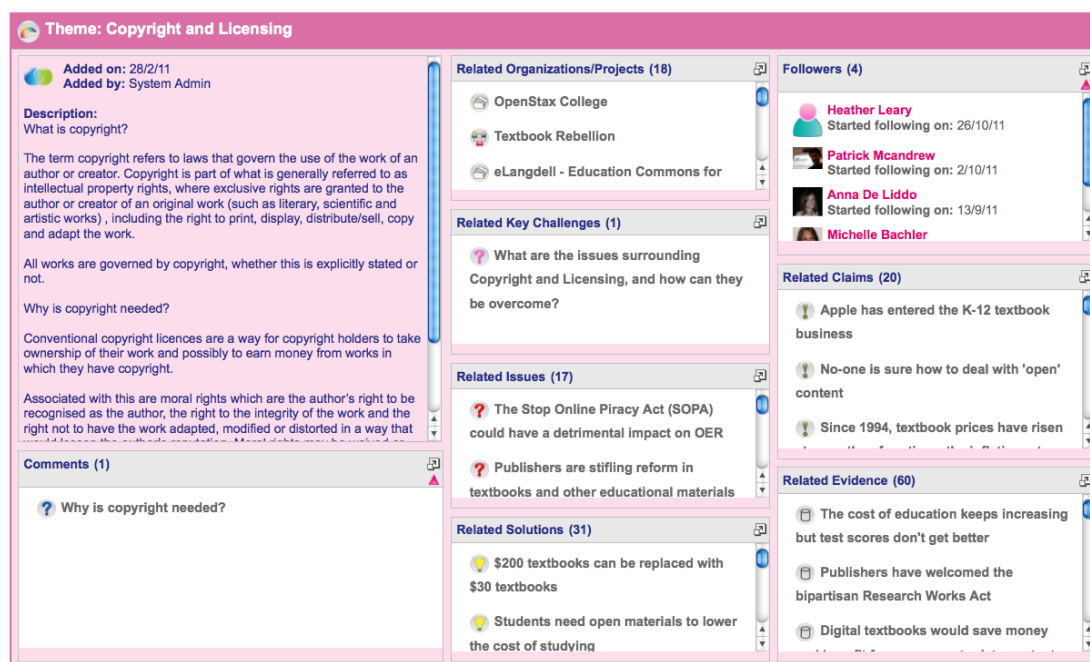


Figure 2. Explore view of “Copyright and Licencing” Theme

### Some Facts and Figures

The Evidence Hub alpha version has been launched in April 2011 at the OER11 Hewlett Grantees meeting in Sausalito. In order to preserve quality of data entry the System was initially kept closed, so users could register and request approval before they could start contributing to the site. The system has been opened to the public at OpenEd11 in Utah. At that point, in a brief period of time, the number of EH users doubled.

The Evidence Hub at the moment has about 100 signed up users, amongst whom there are well known members of the OER community (user information is available via ci.olnet.org) and it received 3,054 visits from 1,053 unique visitors from 57 different countries (see Map overlay and Visitors overview maps below Fig.3).

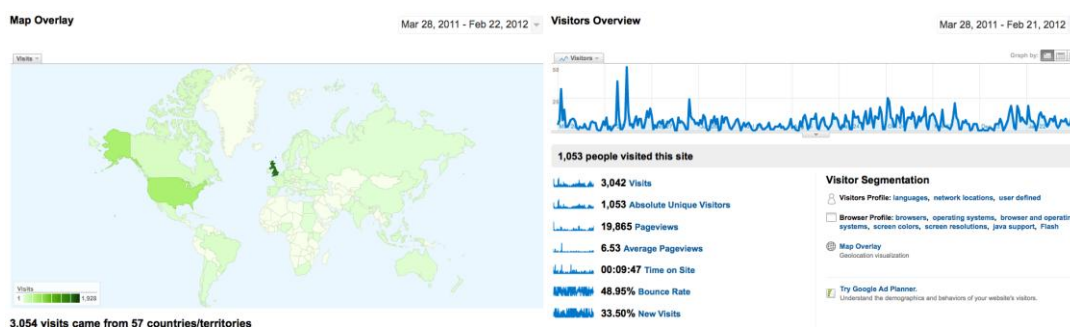


Figure 3. Main Google Statistics on EH visits

Moreover, 299 OER projects and organizations have been added to the Evidence Hub; 129 research claims have been proposed, 79 OER issues and 89 proposed solutions have been connected.

A total of 323 Evidence and 553 Resources have been shared in the Evidence Hub to support both research claims and proposed solutions to specific OER issues. In total 1,472 user generated content elements have been added to the Evidence Hub.

## Reflection on the Evidence Hub User Testing

We conducted a lab-based user interface evaluation with OLnet fellows and researchers to capture their use of, and interests in, the Evidence Hub and to gather usability feedback on the system. Feedback from the users shows that the EH is perceived as a “*relevant*”, “*organized*”, “*desirable*” and “*engaging*” system but at the same time sometimes “*sophisticated*” and “*complex*”. The main suggested improvements regard two aspects of the system: Resources and Summary views.

Users reported that there are a lot of OER open questions that are presented in the system, that are still not developed and they would like to see more evidence, more projects and organizations and more resources in the map. This feedback seems to suggest the importance of content seeding: more content needs to be seeded in the EH so that a critical mass of data is reached and can catalyse interest from the wider OER community.

At the same time though, users reckon that where information gets too much, they need assistance in grasping the bigger picture: what are the main issues and to what key challenges they relates to, what are the key resources to inform policy makers? What are the strongest arguments for Open Education?

Based on these usability feedback future improvements for the EH should move toward two main objectives: *facilitate and simplify content seeding and improving the user experience by creating summary views and better displays and filters on the content.*

A first attempt toward the second goal we developed Overview pages for each content type, which show the “most recent”, most connected” most voted” and “most popular themes” for each content type. Example Overview pages for Evidence (Fig. 4), Project and Organizations (Fig. 5) are shown below. Finally an overview page for users activities is shown in figure 6.

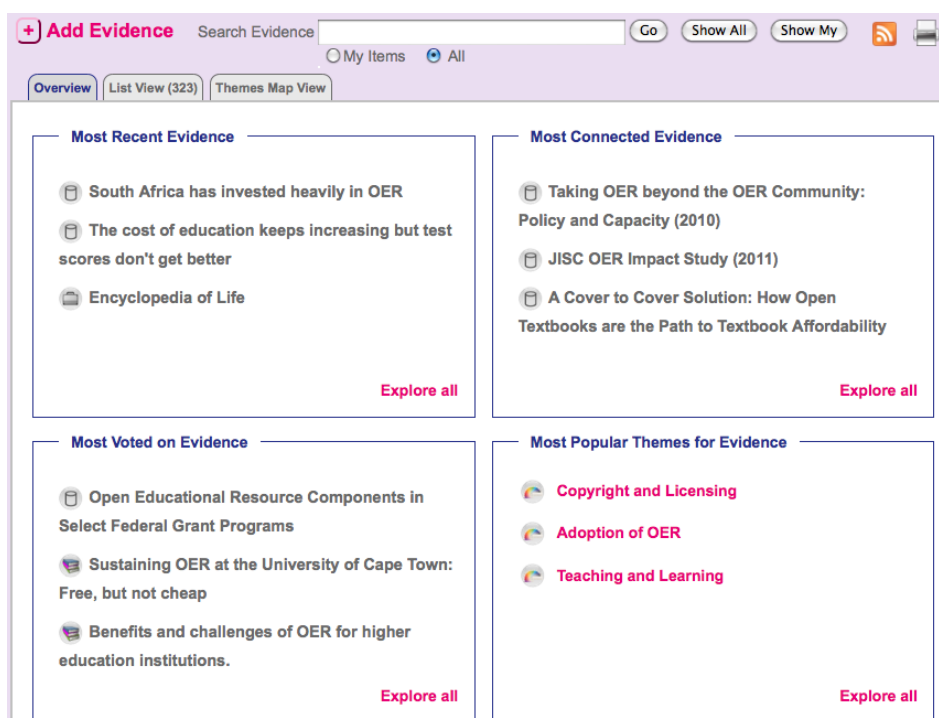


Figure 4. OER Evidence Overview Page

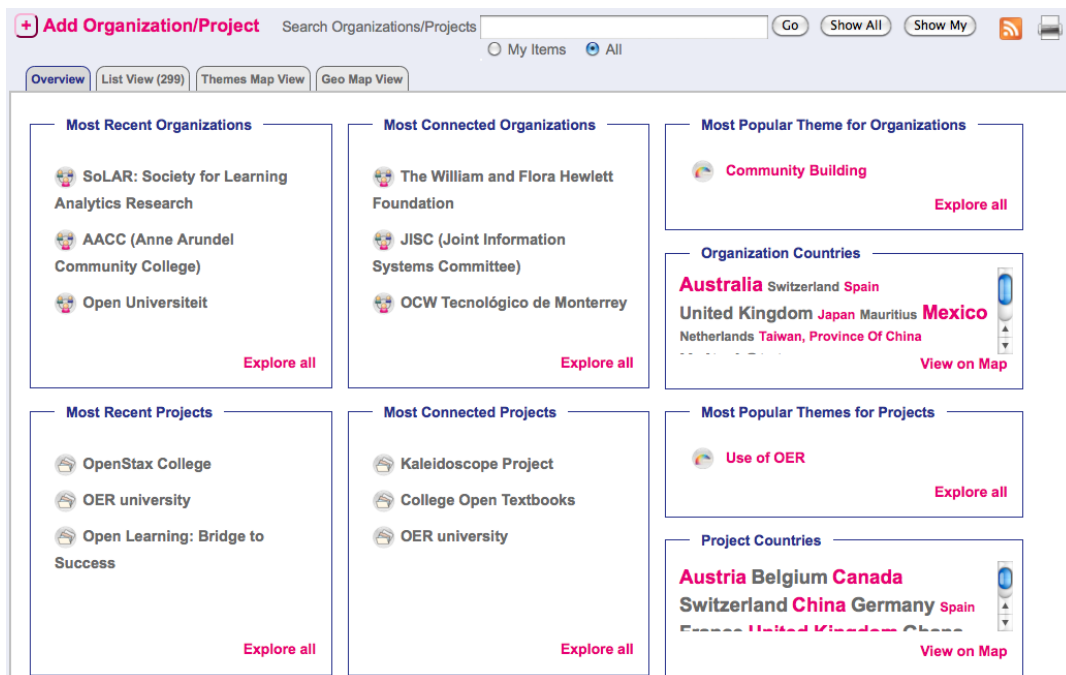


Figure 5. OER Project and Organizations Overview Page

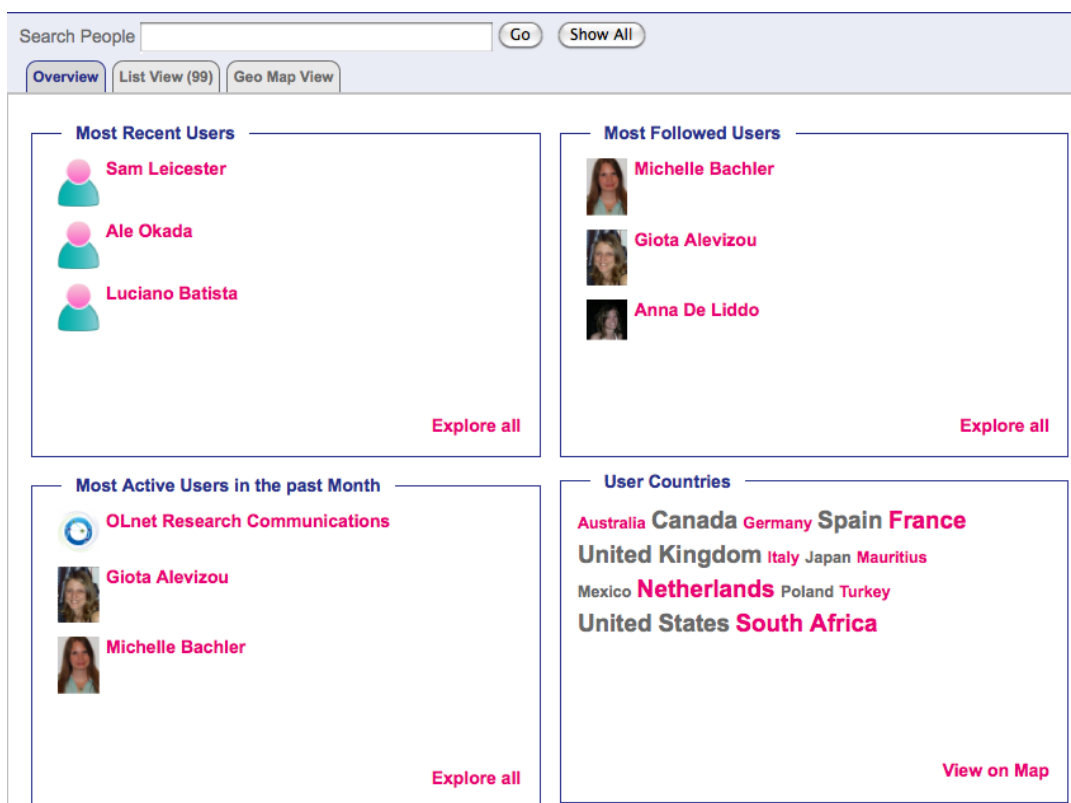


Figure 6. Evidence Hub users activities

## Seeding Content

The sense-making features of the OER Evidence Hub can systematically support the open education movement in a number of ways; analysing, condensing and linking key messages from OER research. However, as discussed in the previous section, before the community can engage with such a tool it is first necessary to provide the Hub with relevant content. This has two main purposes. Firstly, it serves to illustrate the semantic architecture of the site, showing users how to distil and connect their own content and claims in the context of the challenge/solution dynamic of the site. Secondly, it provides a service to the OER community

by offering a digested account of the evidence for and against OER which can be connected in novel ways, attracting the comments and votes of leaders in the field *collectively*.

An important precursor to this kind of activity is the process of identifying data sources, collating relevant materials, curating and analysing them to extract the key information. There is often a need for individual publications or other forms of scholarly activity to be digested in order to make them more accessible. The recent JISC OER impact report (Masterman & Wild, 2011), for example, comprised various focus groups, interviews, surveys, workshops and literature reviews. The report itself is almost 90 pages long; perhaps too long for many to read thoroughly. OLnet researchers analysed the report, breaking it down into the following key claims.<sup>20</sup>

- ‘Practical things that policymakers and advocates can do to promote the adoption of OER’
- ‘Institutional support for OER adoption’
- ‘Academic staff who support learners can do a number of things to promote OER use among students’
- ‘Academic teaching staff should approach OER primarily as a means to enhance practice’
- ‘OER Impact on individual practice is most likely to be achieved within the dimension of social practice’
- ‘The role of logistical factors in inhibiting the large-scale uptake of OER is not to be underestimated’
- ‘A positive disposition towards the reuse and sharing of learning resources, together with an essentially collaborative outlook, are essential prerequisites for teachers’ uptake of OER’
- ‘The benefits of OER to individual educators’

These are linked to other claims, evidences, proposed solutions and challenges within the OER Hub, providing pathways through the debate that others can follow, redirect and connect in novel ways.

Through a similar process, the policy recommendations from the UNESCO/Commonwealth of Learning policy forum that took place late in 2010 at the UNESCO headquarters in Paris (UNESCO, 2010) were distilled directly into the OER Hub.<sup>21</sup> The forum was attended by participants from 60 member countries. Their discussion was distilled to the following eight potential solutions.

- ‘OER is not just for open universities but can be used for any university’
- ‘OER can expose students to resources developed by others which will enhance their learning experience’
- ‘OER content can offer suitable acknowledgements to the original author(s)’
- ‘OER can assist in addressing issues around access to resources’
- ‘Collaboration between institutions could lead to reduction in costs as the development costs will be shared’
- ‘Good OER could enhance the reputation of those institutions producing the OER’
- ‘Top, world-class universities provide curricula and materials to developing nations’

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<sup>20</sup> <http://ci.olnet.org/explore.php?id=137108145400024718001315313007>

<sup>21</sup> <http://ci.olnet.org/explore.php?id=137108145400029591001315407654>



- ‘Student involvement in the development of OER resources can be part of their learning process

This kind of distillation activity can be a useful exercise in its own right, but providing this kind of analysis on research reports on behalf of the community is only a starting point for community involvement. Content needs to be relevant and reflect the real conversations that are taking place within the community.

Accordingly, the OLnet team worked with a number of prominent OER advocates to try to capture and influence the discussions that are taking place through the OER Hub. One of the most prominent uses of the platform thus far has been to distil and seed content from discussions taking place among of high-profile OER advocates.

The ‘OER Advocacy Coalition’ on Google Groups has been an important source of content in this regard (Google Groups, 2012). The group has more than 120 members who work towards the promotion of OER and policies that support OER, serving as a communication vehicle and information repository for the emerging movement. News items, research reports, commentaries and informal discussions take place in the group every day, meaning that it is a rich source of content that is deemed relevant by experts. Websites that are mentioned can be added to the list of resources in the Hub, and the essence of the data and claims made within them entered separately and linked up to the information already published.

There are a number of benefits to working with a group in this way. By using their own language and frames of reference, we can more authentically represent the thought and communication of the community and encourage them to participate in collective intelligence. By identifying connections between disparate pieces of information and opinion shared within the group, the OER Hub can make explicit important connections and contentions that might be in the background or held at the level of assumption. Importantly, the dynamic nature of the OER Hub allows members of the community to see the history of their own thoughts and discussions represented analytically and in a form that is useful for their work as advocates.

One of the most significant pieces of policy arising from the recent work of the group has been a simple policy recommendation with potentially profound consequences: that all publically funded research should be made available to the public under open licences rather than locked away behind paywalls or within the pages of expensive journals. The argument is simple and persuasive. The OER Hub provides a way for the community to show how such policies can make a difference to the challenges facing the education world by treating them as potential solutions and showing how they are related to other policies and the best evidence that is available. For an overview of the policy position, see Wiley, Green & Soares (2012).

### **Conclusions: Issues and Strategies for building CI platforms**

Our research has confirmed that a pervasive challenge for building CI platforms is balancing a critical tension. This concerns the tradeoff between the need to structure and curate contributions from many people, in order to maximise the signal-to-noise-ratio and more advanced CI services (e.g. queries that no website can answer at present: *What is the most strongly evidence-based proposal? Which research has had most real world impact?*) — versus permitting people to make contributions with very little useful indexing or structure (the bias in most social web platforms), which is easier because it requires less reflection or learning how the site is structured. This tension is reported by every CI research group we know, most recently, at the CI workshop we chaired at the CSCW conference<sup>22</sup>. It is fair to

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<sup>22</sup> For more information about the CI workshop at CSCW2012 please visit: <http://events.kmi.open.ac.uk/cscw-ci2012/>

conclude that we have made some progress in this project with respect to this challenge, but it is a very tough problem, and far from solved.

To date we cannot claim to have built a large, actively contributing user community. Rather like Wikipedia, the majority of data from diverse sources has been entered by a small percentage of editor/champions (but since our overall numbers are far lower than Wikipedia, the numbers are also small). In the early stages of a new CI site, it is inevitable that the burden falls on the project champions to populate the site in order to demonstrate the concept with meaningful examples. An open research question is whether higher level CI (ie. not just aggregating low level data such as clicks and ratings, but issues, solutions and evidence) can be structured by ‘normal people’ (rather than structured data enthusiasts such as those who built freebase.com), or whether the skills of curation and mapping will remain the preserve of a minority, with the majority of contributors submitting relatively conventional freeform texts with a few tags.

A number of strategies could be considered to address this challenge in future work:

- A bootstrapping strategy is to fund a project specifically to resource subject matter experts in each of the Hub’s themes to serve as knowledge curators in their field, and build a network of curators.
- Another is to invest in a project to pilot smarter semantic and language technologies to convert freeform text as it is found on the web, into more structured, semantically indexed databases.
- Another strategy is to require the submission of structured summaries by members of the OER community – but this option of course only applies to members for whom this might be a formal requirement, e.g. specified by a project funder or leader.
- Another strategy is that research groups resolve to distill their findings in this way, as part of their academic commitment to knowledge dissemination and debate (e.g. a commitment that the network of UNESCO Chairs in open education might consider).

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# **The Open Education Movement in Australia: The Need for Political Leadership**

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## **Introduction**

As more and more countries and governments join the open education movement, the Australian government has to date shown limited interest in embracing the key tenets and aspirations of the movement. One reason for this reluctance to embrace free and open access to education may be linked to the provision of international education in Australia. The industry generates billions of dollars in annual export income. It is this economic reality that may represent one of the powerful barriers to concepts surrounding “free”; whether access, sharing or repurposing. Despite such barriers, there have been some initiatives and policy developments at the governmental level in Australia.

This paper starts by exploring some of the most important OER initiatives in Australia, and then describes a centrally funded research project that investigates the state of play of OER in Australia. After that, the authors report on some of the preliminary findings of this research in progress, which surveyed the higher education sector and interviewed key stakeholders. The research findings revealed that there should be greater strategic leadership from government bodies and institutions to regulate the adoption of OER in Australia. According to participants, there is an urgent need for public policies to promote access and availability of OER in the higher education sector, and that these policies could encourage the growth, development and institutional adoption of open educational resources and practices across the sector in Australia.

## **OER Movement in Australia**

OER represent an emergent movement that is re-shaping learning and teaching in higher education worldwide. Identified by the last Horizon Report as one technology to be closely consider by higher education institutions, OER are likely to influence the way institutions worldwide deliver education in one year or less (Johnson, Levine, Smith, & Stone, 2010). According to that report, the growth of the open educational trend “is a response to the rising costs of education, the desire for accessing learning in areas where such access is difficult, and an expression of student choice about when and how to learn” (Johnson, et al., 2010, p. 6). In addition, it also argued that OER has the potential to meet the growing demand for higher education worldwide, and to close the gap between formal, non-formal and informal education (Kanwar, Kodhandaraman, & Umar, 2010; Pereira, 2007). In fact, research conducted by UNESCO has identified that the higher education sector is the lead stakeholder for the dissemination and development of OER (D'Antoni, 2008). However, not every country has taken advantage of the full potential of OER. Australia, for instance, has a limited number of OER initiatives and programs at higher education levels compared with the US, UK and some other European countries. One possible reason could be the lack of a national framework and research to support educational institutions (Fitzgerald 2009). Another reason could be the lack of institutional guidelines and support, as well limited understanding of the issues surrounding OER, including copyright and intellectual property issues (Bossu, Brown, & Bull, 2011).

Some of the most popular OER initiatives at institutional level are:

- Macquarie University with its Macquarie E-Learning Centre of Excellence (MELCOE), which specialises in developing open source software tools and open standards for e-learning (OECD, 2007);
- The University of Southern Queensland (USQ), which remains the only Australian member of the OpenCourseWare Consortium (OCWC) (Bull, Bossu, & Brown, 2011);
- USQ, and more recently the University of Wollongong, are the only two Australian universities members of the OER university initiative (Thompson, 2011);
- The College of Fine Arts (COFA), with the University of New South Wales (UNSW), developed quality video and text resources to assist educators to teach online (COFA, 2011); and
- The University of Canberra RecentChangesCamp2012; an annual meeting of interested Open Space. This free gathering has been taken place for the third time in Australia and it is focused on wikis and online collaborative practices. “The aims of these events are to draw together people interested in worldwide iterative knowledge involvement or wikis, to discuss and share knowledge, and eat and socialise in a friendly face to face setting” (RCC2012, 2012, para. 1).

Also, some Australian universities have released some of their teaching materials through iTunesU. Others have created repositories of learning objects. Unfortunately, some of these repositories can only be accessed by the universities’ staff and students. Even though some these repositories support the Creative Commons license, very few allow for redesigning and repurposing of the content, which therefore limits the value of these resources. In addition, OER have also been adopted by the Vocational Education and Training (VET) and Technical and Further Education (TAFE) sectors in Australia.

In addition to the institutional initiatives mentioned above, there have been some programs and policy developments at the governmental level in Australia. Some of them are:

- The Australian Government’s Open Access and Licensing Framework (AusGOAL), which provides a set of guidelines “to government and related sectors to facilitate open access to publicly funded information” (AusGOAL, 2011, para. 1);
- The Australian National Data Service (ANDS), which is a database containing research resources from research institutions in Australia (ANDS, 2011);
- The Guide to Open Source Software for Australian Government Agencies, which is a policy that requires that government agencies first consider open source software options when requesting tenders (Gray, 2011); and
- Government 2.0, which is an Australian government initiative focused on the “use of technology to encourage a more open and transparent form of government, where the public has a greater role in forming policy and has improved access to government information” (Australian Government, 2012, para. 1).

Even though the above Australian government developments are on par with a number of developments in the UK, the US and also in some European countries (Helsper, 2011), they are mostly concentrated on government bodies. The opposite can be said in relation to policies and developments with an educational focus, as Australia seems to be behind the mentioned countries (Bossu, et al., 2011). If the Australian government wishes to take advantage of the benefits of open educational resources and practices, it will need to adopt strategies that take this movement out of the shadows and place it in a more prominent position within the educational mainstream. Such strategies could assist the government to effectively achieve some of its current agenda, such as to increase participation and access to education to a more diverse student cohort, particularly working adults and those residing in rural and remote

locations of Australia (Bradley, Noonan, Nugent, & Scales, 2008). The lack of government leadership on the adoption of OER has encouraged a group of academics and researchers to develop a project proposal to the Australian Learning and Teaching Council (ALTC), a national funding body. The proposal was successfully funded and is presently in its second year. The remainder of this paper will describe this research project titled “Adoption, use and management of Open Educational Resources to enhance teaching and learning in Australia” and present some of preliminary findings.

### **The Research Project**

The overarching purpose of this project is to develop a “Feasibility Protocol” to enable and facilitate the adoption, use and management of Open Educational Resources (OER) for learning and teaching within higher education (HE) institutions in Australia. The Feasibility Protocol will prompt questions and raise issues that need to be considered by institutions wishing to enter the OER movement. With narratives and discussions from the data analysis, examples of practices and literature review, this protocol aims to assist senior executive managers and others to make informed decisions within their institutions regarding how to approach the adoption of OER.

The Feasibility Protocol (see Figure 1) will contain a set of guiding principles with information on:

- Policy recommendations for higher education institutions in Australia regarding adoption, use and management of OER, including copyright, intellectual property, licensing and other legal issues (policy analysis);
- The benefits and barriers involved with the adopting of OER and OEP (literature, survey and interview data);
- Factors related to the use and adoption of OER and OEP such as scope, purpose and strategic directions; and
- Implementation and impact of OER on institutional culture, institutional support, human resources and other resources allocations.



**Figure 1:** The structure of the Feasibility Protocol

This is the second year of a two-year research project. The first year involved a comprehensive analysis of the relevant literature surrounding OER internationally and

nationally, the collection of institutional and national educational policies and frameworks that enable OER practices and development. Also, an online survey and subsequent interviews were conducted targeting a whole range of higher education stakeholders across Australia. We are currently conducting a preliminary analysis of the data, which will provide the basis of a one-day Symposium, with higher education stakeholders to be invited to attend and provide further feedback on the Feasibility Protocol. The Symposium is also a key dissemination point for this project (Brown & Bossu, 2011; Bull, et al., 2011). Additional feedback gathered during the Symposium will be included in the final analysis, and a comprehensive research report will be then produced and distributed throughout the sector and to interested bodies.

### **Some Preliminary Findings**

The online survey was the major instrument of data collection. There were 101 valid survey responses and 24 participants offered to be interviewed. These numbers are considered acceptable by the research team, as the Australian higher education sector is relatively small, and the sample compares favourably with similar European research surveys. The survey sample included participants from 32 universities in Australia, out of the existing 39, while four other tertiary institutions also responded to the survey. As for the interviews, 24 interviews were conducted with participants from 18 institutions. There was also a balanced gender distribution amongst the respondents: 48 percent male and 51 percent female. The samples also have a good representation of university stakeholder groups (Bossu, et al., 2011). The majority of respondents have been aware of the OER movement from two to five years and rated their knowledge of OER as intermediate. As for those who have adopted OER, learning objects have been the most preferred type of resources applied in teaching and learning. In a similar fashion, most participants declared that they are not involved in collaborative OER initiatives either in Australia or internationally. However, they indicated that they would like to be involved in OER activities in the future if the opportunity arises. The lack of adoption and participants' involvement in such activities could be due to the fact that OER practices and initiatives are not included in the current strategic plans of most participating institutions, as declared by the participants. One possible reason for this could be that there have been some small and isolated initiatives occurring within individual institutions (Bossu, et al., 2011). Another possibility could be that the lack of government incentives for the adoption of OER might be already impacting the growth of the movement in Australia by stopping institutions and their academic staff from participating in open educational practices. In fact, the above situation was revealed in the data, as participants believed that government policies are necessary to regulate the adoption of OER in Australia. They also believed that dedicated OER public policies could encourage the growth, development and institutional adoption of open educational resources and practices across the sector in Australia. Even though the efforts of some individual OER initiatives have succeeded at the institutional level in Australia, the movement has expanded faster and more effectively in countries where support was provided at the national level. Particularly in Australia, this support could come in the form of more flexible policies. According to participants, the Australian government should also support higher educational institutions through grants or financial awards to encourage the development of OER, together with a culture of open practices.

As for institutional policies, they were considered an important factor to promote the effective use and adoption of OER. According to the participants, educational institutional should develop policies and activities to promote OER awareness and to clarify issues related to intellectual property and quality assurance. Institutions should also promote and recognise OER initiatives, and this could also occur through financial initiatives. This was also true in studies undertaken in Europe and other parts of the world (OECD, 2007; OPAL, 2011). In fact, many have alerted institutional policy-makers of the existing institutional strategies to

the adoption of OER, and that these strategies could be implemented through appropriate internal regulations and guidelines (Atkins, Brown, & Hammond, 2007; Downes, 2007; Kanwar, et al., 2010).

## Conclusion

This paper discussed some recent OER developments within higher education institutions in Australia, as well as some attempts to make available publicly funded research, resources and government information through federal open access policies. Unfortunately, the adoption of OER within mainstream education in Australia appears to be limited due to the lack of educationally focused policies and initiatives, as demonstrated by the research described here. It appears that the Australian government is aware of the open education movement, but has been slow to recognise the global altruistic benefits of the OER movement. According to participants in this research, the movement must be more fully supported by government policies which support and encourage institutions to share their resources for the public good. Delay in the introduction of open educational resources, as mainstream policy in the provision of education in Australia, could hamper the drive to widen participation in higher education and slow educational collaboration and innovation.

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# Using Open Technologies to Support a Healthy OER Life Cycle

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## Abstract (500 words)

Open educational resources (OER) are abundant within internet repositories and websites hosted around the globe, and to be truly open, accessible and reusable, the OER need to be available in usable and adaptable forms. A challenge for all involved in OER is how to create a healthy life cycle of discovery, use, reuse and sharing. The aim of our research is to develop on-line strategies for supporting this life cycle.

At De Montfort University, as part of our Phase 2 and Phase 3 UKOER projects we have created bespoke project websites and used search engine optimisation (SEO) techniques to enhance OER discovery and to attract visitors and OER users to our websites. We release OERs in multiple formats to ensure maximum accessibility and interoperability across technical platforms, including computers, tablets and mobile phones. Our approaches also include social networking strategies to build on-line communities of users.

This paper starts to summarise some of our technical approaches and advanced SEO techniques employed. The impact of these techniques on OER discovery and use is being evaluated and will be reported upon in the UKOER Phase 3 final report.

## Keywords

Search engine optimisation, social networking, open educational resources, discovery

## Introduction

There is an abundance of OER available through the internet and one of the challenges for individuals and institutions involved in open education activities is gaining an understanding of how to create a healthy OER life cycle. This life cycle reflects the means to easily search for resources, to use and/or improve them, and a means of sharing the results (Yergler 2010). Another important consideration is thinking about how to sustain these open practices within an educational setting; OER use needs to become part of daily activities in order for the whole initiative to be maintained (Atkins, Brown, and Hammond 2007; D'Antoni 2008).

Currently OER are spread across multiple global repositories and are available in open spaces such as YouTube and Flickr for example. Searching and finding relevant material is often time consuming and in itself a challenge to academics and students. An associated problem is how to maintain repositories and websites beyond the duration of project funding to ensure resources are always discoverable? The lifespan of content repositories are often fragile, and in Friesen's study he describes the case of 11 content repositories that were discontinued between 2000 and 2010, of which 9 were less than five years old (Friesen 2009).

Our approach for two UKOER projects has been to house OER on search engine optimised websites and to use a social networking strategy mediated by Posterous.com to publicise resources and news items as described previously (Rolfe and Griffin 2011a). Search engine optimisation (SEO) is the means of increasing the numbers of visitors to a website through ensuring the site ranks highly in a search engine search results (La Ferney 2007). Studies have shown that 60% of internet traffic is directed to the first three websites that rank on the first page of the search results, and websites that rank lower down gain a smaller proportion of

possible click throughs (Hodgson 2010). Figure 1 summarises our SEO process that we employed on our Phase 2 SCOOTER Project.

<b>1 Brainstorm Keywords</b>	What are the keywords or keyword phrases the users would enter into a search box to find your site? Choose one main theme keyword and about 5 related category words.
<b>2 Keyword Analysis</b>	Using free Google Tools or commercially available software, analyse the potential of your keywords. What is the search volume? How large is the competition and how strong and established are these competitor websites?
<b>3 Map Keywords to Pages</b>	Choose a URL that contains your chosen main theme keyword. Include the theme keyword in the title of your site and the description. Also include category keywords your description. On-page optimise your website for keywords.
<b>4 Design Optimised Site</b>	Design website with good user functionality. Include the keyword in title and sentences of blog articles. Name all included images or video with keywords. Post new content regularly to update your site.
<b>5 Back-link Strategy</b>	Obtain authority for the website by regularly creating back-links. Get other related sites to link to your site using the keywords as anchor text. Use social networks to enhance the reputation of your site.
<b>6 Evaluate Performance</b>	Use Google Analytics to track user activity. What search terms people are using to find your site? Which other keywords are visitors using that you are currently not actively targeting?
<b>7 Refine</b>	The search engine algorithm is constantly changing in order to give the user the best search result. Keep connected with the on-line marketing community for news updates.

Figure 1: SEO Checklist (Rolfe and Griffin 2011b).

How does a website gain traffic? Visitors can arise from three sources, and SEO processes boost all three. Organic traffic refers to visitors who discover the site through a search (Google, Bing or Yahoo). Direct traffic refers to visitors who enter the web address directly and can be the result of off-line marketing and publicity, and referrals are visitors who arrive from a referring website that contains the web address; this is known as a back link, and gaining back links is an important part of SEO strategy. Therefore when developing an optimised site, two customers must be considered: Google who will rank the site based on its algorithms and the public who will require a usable and accessible interface. We refer to the importance of Google algorithms since this search engine takes over 80% of all internet traffic (NetMarketShare 2012).

The aim of our research is to develop and evaluate effective strategies for enhancing the discovery and reuse of resources in order to support the OER life-cycle and to support the sustainability of OER activities.

## Methods

### Enhancing OER discovery

The Virtual Analytical Laboratory (VAL 2009); Sickle Cell Open (SCOOTER 2011) and Health and Life Science Open Educational Resources (HALS 2012) are websites housing OER. VAL is a static website whereas SCOOTER and HALS are fronted on the WordPress content management platform (WordPress.org) to assist our search engine optimisation strategy. This ensures the discovery of the individual OER via the search engines by releasing resources within blog articles, our “OER” blogs. In addition, we release news and more informal articles in the form of “news” blogs. The importance of the blog articles is that relevant targeted keywords and phrases e.g. “sickle cell anaemia” are embedded within the text, and the blog facilitates distribution of materials via RSS feeds. Each blog article is associated with relevant Technorati tags to aid on-site navigation and to make sure that search



engine ranking algorithm understand what the articles are about so it is accurately ranked. Also each blog post has highly visible links to social media facilitating easy sharing of the OER via Twitter and Facebook for example.

Each OER is catalogued on a database and tagged with relevant keywords for ease of searching on the site. OER are also distributed via other sharing websites including images on Flickr and Picassa; videos both film and animation conversions on YouTube, and presentations on SlideShare. Therefore, the OER reach broad audiences including educators, students, other professionals and the general public. Targeted audiences can be reached through Facebook Pages and Twitter Groups on-line, and off-line through project dissemination activities and subject conferences.

In the HALS project our strategy has evolved to release OER in blog articles, and the release of materials ensues steady ensuring that both “news” blog articles and “OER” blog articles are published on a regular basis, rather than bulk releasing in one go. This is to ensure steady discovery of the materials by the search engines to aid natural rise in ranking of the resources and the website in the search engine results pages. Google often does not appreciate any unnatural and sudden events.

### **SEO Campaign Analysis**

Another improvement to our SEO strategy in the HALS project compared to SCOOTER is to audit the site more thoroughly and more regularly. We are using a commercial management tool (Analytics SEO <http://www.analyticsseo.com/>) to monitor the site’s performance which includes correct technical setup and load time, analysis of competitors, analysis of keyword performances, monitoring of back link and link building strategies, and monitoring the impact of specific on-line marketing campaigns and off-line events such as attending conferences.

Other analysis of ranking positions for keywords, visitor numbers and behaviours is completed using commercial software Market Samurai (<http://www.marketsamurai.com/>) and also via Google Analytics which is a free service to monitor traffic visiting trends of every web page and blog article.

Additional analysis and gathering of comments is carried out by monitoring social network data, e.g. numbers of Facebook “likes”, and by collecting comments and project emails. More informal evaluations are carried out via on-line surveys using SurveyMonkey (<http://www.surveymonkey.com/>).

### **Encouraging OER Use and Reuse**

Essential to ensuring that OER are used is the inclusion of clear signposting with the Creative Commons License. In our projects, every resource contains the license details and instructions on how comply with the terms. All our OER are published in multiple file formats to ensure they are accessible by learners with different needs, and this also meets the technical standards required to ensure that OERs are interoperable across a number of platforms and devices, from computer to tablet device to mobile phones, and complying with both PC and Macintosh platforms.

For example narrated Flash animation files (.swf) are also published as videos (MP4), although the animation may need to be adapted to remove buttons and interactivity provided by Action Scripting code which will not function in the video format. Narrations are transcribed in accompanying PDF files, and these are also provided as editable Word documents and text (.txt) files. A strategic change in our HALS project is to be more systematic in our approach. The latest on-line marketing techniques produce different modalities from one content source in systematic way (Williams 2011). This approach offers

an interesting model for widening the interoperability and accessibility of OER, and is also a framework for encouraging reuse and adaptation. In terms of SEO the advantage is that from one piece of content, or one resource, multiple file types can be deployed to multiple internet locations to maximise use.

### **Building communities of users**

As part of our Phase 2 SCOOTER project we endeavoured to build a network of users via a Forum, but although people willingly registered and provided their email addresses, they were less willing to comment on the forum. Users did however readily email the project team, and comments were obtained via Facebook, through Twitter and on YouTube. In the HALS project we are evolving and evaluating a more robust social networking strategy, using Facebook and Twitter to their maximum potential by proactively seeking out relevant and interesting groups. A remit of HALS is to provide university taster materials to prospective science students, so Facebook is an appropriate means of connecting to young users.

### **Conclusion**

Using openly available technologies to enhance the discovery, use and reuse of OER are essential to the resource life cycle. There are a myriad of approaches and on-line tools and services available, and we are evolving pragmatic strategies that are relevant to the constraints of a busy academic setting. The impact of these SEO approaches is being evaluated and will be reported upon in the UKOER Phase 3 final report.

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## **We'll always have PARiS.... (Promoting Academic Resources in Society): extending Open Educational Resources into non-traditional areas**

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### **Abstract**

Building on the success of previous open learning initiatives at the University of Nottingham, the JISC/HEA funded PARiS project aims to move OER into non-traditional areas for the University and the HE sector as a whole. The project addresses 2 themes.

The first extends OER into new communities by working in partnership with the Ear foundation, a 3rd sector organisation, on the collection and release of OER. This supports an identified organisational need to expand access to training for The Foundation's target audience of teachers, parents and care providers of children with cochlear implants. Public and private sector funding has been directed to the development of cochlear implant technology and surgical/scientific activity but little to the community – at home and school – the Foundation addresses this.

The Foundation provides a series of face-to-face workshops to support teachers and care givers of deaf students nationally, as well as the wider mainstream teacher community as appropriate. However, with over 80,000 deaf students with cochlear implants worldwide demand inevitably outstrips the available resources.

The second PARiS theme centres on the creation, collection and release of OER in the area of sustainability. The University of Nottingham is strongly committed to the achievement of sustainability in its varied aspects and states this in its Strategic Plan. Nottingham is ranked second in the 2011 UI Green Metric World University rankings of the world's most environmentally-friendly Higher Education Institutions (HEI) and is currently part of the Higher Education Academy's (HEA) Green Academy: Curriculum for Tomorrow pilot change programme, along with 7 other HEI's forming an informal network of 'critical friends'.

The modules being developed for this theme will be embedded within the Nottingham Advantage Award (NAA), an initiative focusing upon the development of graduate attributes. It aims to develop the kind of competencies that employers are looking for in talented new graduates. Some modules being released are existing modules which will be enhanced through the inclusion of third party OER. Some modules will be newly created modules. This will empower the academics involved to create learning materials with openness in mind at the outset of the design process. This is something that was recommended by many JISC/HEA UKOER Programme phase one projects as a way of embedding sustainability around OER processes. It will also provide data back to the community on the benefits and barriers of creating new OER, assessed against the current Nottingham model of openly publishing existing materials.

### **Keywords**

PARiS, UKOER, JISC, HEA, Open Nottingham, Education for Sustainable Development, Cochlear Implants, The University of Nottingham, The Ear Foundation, 3<sup>rd</sup> Sector

## **Introduction**

Building on the success of previous open learning initiatives at the University of Nottingham, the multi-element PARiS project aims to move OER into non-traditional areas for the University and the HE sector as a whole. The aim of the project is to extend the reach of OER into new communities and to new educational challenges. The project addresses 2 themes.

### **Theme 1: Extend OER through collaborations beyond HE**

The first theme is extending OER into new communities by working in partnership with the Ear foundation, a 3<sup>rd</sup> sector organisation, on the collection and release of OER. This will support an identified organisational need to expand access to training for their target audience of teachers, parents and care providers of children with cochlear implants. Public and private sector funding has been directed to the development of cochlear implant technology and surgical/scientific activity but little to the community – at home and school – the Foundation addresses this. Sustainability models within 3<sup>rd</sup> sector organisations will also be explored; including the provision of open access materials to complement fee charging face-to-face workshops. The results of this theme will be of direct benefit to the target audience and to those in the 3<sup>rd</sup> sector and related areas wishing to engage with OER.

### **Theme 2: Enabling sustainable practice**

Through the creation, collection and release of open materials this element of the project will enhance and promote sustainable practice activities across the taught curriculum at Nottingham. It will also support the development of sustainable practice across the HE sector as a whole. This theme will openly release 100 credits of Nottingham's teaching resources and use them as a vehicle for engaging with new communities and to explore the potential to embed compulsory exposure to OER within the UG student curriculum.

In total, PARiS will release 100 credits of Nottingham's teaching resources which will move OER into non-traditional areas and new communities. By sharing its methodology, findings and outputs, PARiS could indeed benefit society as a whole in its exploration of the issues raised in the wider take-up and development of open learning.

## **OER at Nottingham**

The University has a well-established commitment to open learning. This is demonstrated in the University Strategic Plan 2010-15, amongst our aims are to: enable excellence in education through innovative technology deployment and high-quality information provision; enhance University life through technology-based enablement and infrastructure development; and support social responsibility by sharing expertise and resources.

Our commitment to openness is further demonstrated through the JISC funded projects SHERPA, OpenDOAR, and BERLiN as well as the creation of one of the first OpenCourseWare initiatives in the UK (U-Now) and the award-winning open source Xerte Online Toolkits. These activities have given the project team significant practical experience in developing, deploying and supporting the publication of OER in a traditional HE context. Nottingham already has an established technical infrastructure and workflows for supporting the publication of learning resources openly, including: technical support from central e-learning and cataloguing teams; established metadata standards (UK LOM); review by an editorial board that includes participation from both the University Management Board and the IPR Office; a dedicated Open Learning Support Officer; an automatic media attribution service; a public website and RSS feed (for publication more widely including the OpenCourseWare consortium); as well as a local content management system for hosting. In addition, the University hosts one of the world's largest collection of OER through Xpert

(270,000+ resources) and regularly contributes to wider dissemination activities through conferences and SCORE promoted events.

### **Interim Findings**

The PARiS project runs for 1 year from October 2011 to October 2012. The current status and findings of the project (February 2012) are detailed in the sections below.

### **The Ear Foundation**

The Ear Foundation is a charity helping deaf people and their families make the best use of technology to improve hearing and communication. This is achieved through a combination of education, research and advocacy. Currently the Foundation provides a series of face-to-face workshops to support teachers and care givers of deaf students nationally, as well as the wider mainstream teacher community as appropriate. Approximately 3,500 delegates per year enrol on the Ear Foundation's education programme. However, with over 80,000 deaf students with cochlear implants worldwide demand inevitably outstrips the available resources. Through the PARiS project, the University will work with the Foundation to widen access through the open publication of learning materials for core subject areas. The topics covered will be modules to promote understanding and improve learning opportunities for children living with cochlear implants worldwide, including: overview of cochlear implantation; impact of deafness on communication and language learning (educational management & deaf children); challenges of using technology at home and school; maximising the benefit of the technology in education; monitoring progress; and the family role in language learning. These are unique resources not readily available in open formats. In addition, the Foundation has existing international contacts to support conversion of materials for international audiences. Also, the Foundation website has more than 2,500 visitors a day; demonstrating an established on-line target audience for these open materials. The project team has engaged the target audience to establish requirements, and will explore the issues and challenges faced by 3rd sector organisations in collecting, generating and publishing open resources in multiple locations, including (as appropriate) Jorum, Xpert, Slideshare, YouTube and iTunes.

The deliverables associated with this theme of the project are:

- Provide OER expertise and consultancy in multimedia development and open standards technical advice to the Ear Foundation in order to support the development of a sustainable model of OER release - seeking input and collaboration with national advisory bodies such as JISC TechDis and JISC Legal as appropriate. The University will provide clear decision paths, succinct guidance, and practical support.
- Convert learning materials from 7 core subject areas to openly available resources under an appropriate Creative Commons licence. Materials released will support multiplatform delivery through a diverse collection of video based resources, podcasts, documents, PowerPoint slides and interactive learning objects.
- Provide transcripts for all recorded media to aid accessibility and language conversion.
- Explore issues and challenges faced in open publication by 3rd sector organisations, and publish lessons learned through an end of project report.
- Explore sustainability models for 3rd sector partners for OER which complement fee paid face-to-face workshops and accreditation. This will provide an opportunity to quantify the benefits of OER to the Ear Foundation who are keen to assess the commercial viability.

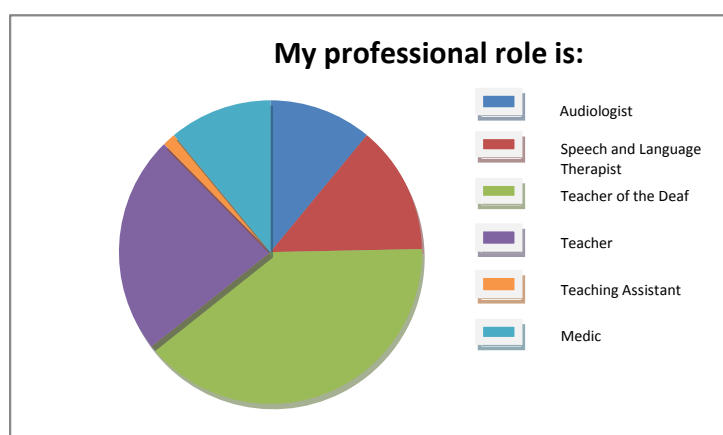
Sustainability within this theme is demonstrated in a number of ways. The work aligns with core Ear Foundation strategy to expand their education provision relating to national and international communities. Delegates who register on the Ear Foundation education

programme (approx. 3500 per year) will be directed to the open resources released as part of pre-work for face-to-face courses, ensuring an immediate and significant user group is established for the material in addition to the wider benefits of open publication. There is also commitment from the Ear Foundation to continue to explore the viability of an OER model post funding period.

The early stages of this theme have been focussed on a needs analysis with the target audience. Responses were collated from delegates who attended courses provided by The Ear Foundation between November 2011 and February 2012 along with those provided by target emails to known professionals in the field both in the UK and overseas.

The questionnaire was designed to identify need in 6 core areas known to impact upon outcomes for children; overview of cochlear implants, impact of deafness on communication and language learning, challenges of using technology at home and school, maximizing benefits of technology in education, monitoring progress and family role in language learning. Quantitative and qualitative data was captured through the online questionnaire and open questioning to professionals who identified themselves as potential users of OER. The demographic of the group that were involved in the needs analysis can be seen in the table below.

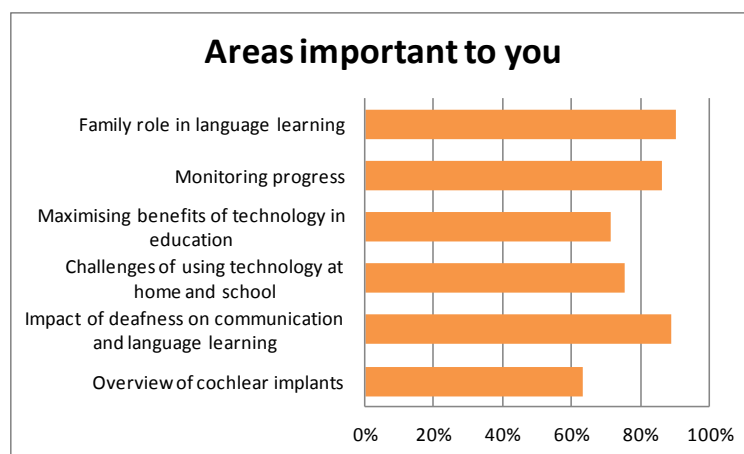
Table 1: Demographic of needs analysis respondents



Results were collated from 74 completed online questionnaires and 10 email surveys to professionals who identified themselves as potential users of Open Educational Resources from The Ear Foundation.

Professionals rated 6 cores areas on a 5 point scale from not important to very important; all areas were rated as very important by at least 34% but only not important by 5% of respondents demonstrating an identified need in all. The impact of deafness on language and learning rated highest followed by the family role in language learning.

Table 2: Areas deemed by respondents



The results were analysed further by professional group for the two largest groups of respondents, Teachers of the Deaf and Teaching Assistants.

Table 3: Areas deemed important by Teachers of the Deaf (TOD)

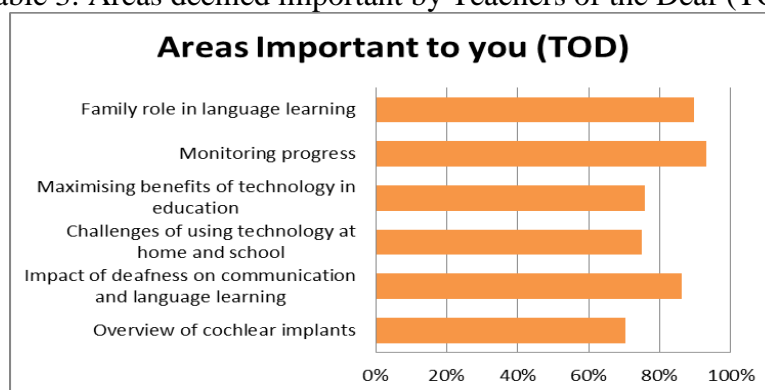
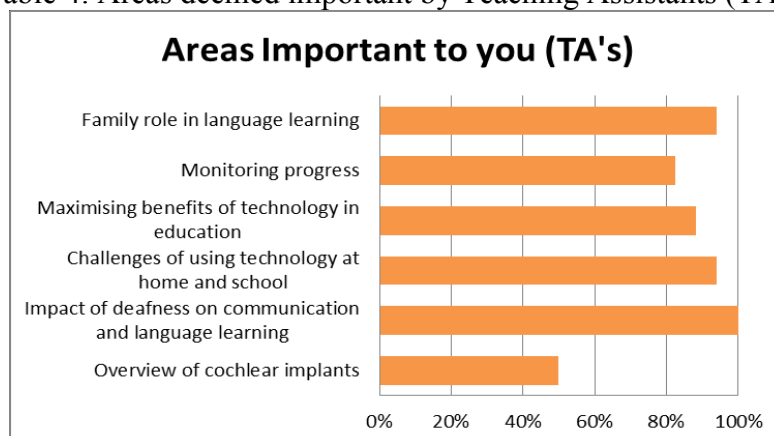


Table 4: Areas deemed important by Teaching Assistants (TA's)



Both groups reflected the whole group trend rating the impact of deafness on language and learning of highest importance, the family role in language learning as second and monitoring progress was felt to be third. Comments of Teachers surveyed further reflected a higher need for information about Cochlear Implant technology with staff needing to know about care and maintenance so not to be fearful about handling a young child's equipment.

In addition Teachers of the Deaf identified:

- 'Information for supporting Families through the Cochlear implant process;
- 'Expectations for children who are receive cochlear implants after a late diagnosis of hearing loss and those children that have additional and complex needs'



- ‘Examples of good practice in other schools/authorities/cochlear implant centres’
- The importance of ‘learning to listen - practical information to maximise listening opportunities for our children’

### Recommendations

Currently around 80% of the respondent’s access online resources for learning but 97% would be interested in resources available from The Ear Foundation. The 6 cores areas will be spread over 4 key themes to make information within each easily identifiable to professionals’:

- 1) Overview of Cochlear Implants
- 2) Monitoring of progress
- 3) Use of Cochlear Implants at Home
- 4) Use of Cochlear Implants at School

Professionals identified language learning as most important, both the impact of deafness and the family role. This will be explored through the use of Cochlear Implants at home and school and will be placed within the challenges of learning as a child using this technology to hear.

The needs analysis identified that OER should be produced that can be used by TA’s themselves and by TOD who will use them, to provide face to face training. This level of information would be suitable for someone with limited experience of Cochlear Implants and other uses have been identified overseas in countries where the use of this technology is very new to all professionals. Open Educational Resources will be made available through The Ear Foundation website along with links to other useful sources of information.

Table 7: Mapping of key themes to resources

Key Theme	Open Educational Resource
Overview Cochlear Implants	Bespoke e-learning module Powerpoint presentation Media clips of CI users Word document quiz
Monitoring progress	Bespoke e-learning module Word document assessment tools Media clips of CI users
Use of Cochlear Implant at Home	Bespoke e-learning module Powerpoint presentation Media clips of CI users Images of CI users Word document checklist
Use of Cochlear Implant at School	Bespoke e-learning module Powerpoint presentation Media clips of CI users Word document quiz

### Education for Sustainable Development

The University is strongly committed to the achievement of sustainability in its varied aspects (environmental, social, cultural, economic) and states this in its Strategic Plan and also in its Teaching and Learning, and Environmental Strategies. Nottingham is ranked second in the 2011 UI Green Metric World University rankings of the world’s most environmentally-friendly HEI’s. Nottingham is currently part of the HEA’s Green Academy: Curriculum for

Tomorrow pilot change programme, along with 7 other HEI's forming an informal network of 'critical friends'. Green Academy assists us in the development of a change agenda for the embedding of sustainability within the curriculum and the enabling of sustainable practice, and has facilitated the development of a team of Sustainability Champions drawn from across the University community (academics, administrative and estates staff, students).

While Nottingham already has much provision and good practice across its three campuses that supports the enabling of sustainable practice, this provision is disparate, and not sufficiently embedded within our core business of teaching and learning. PARiS is enabling the project team to work with the wider Nottingham community across our international campuses (staff and students) to collect and release open resources around existing Education for Sustainable (ESD) activities. These resources would be focussed at undergraduate level. A recent curriculum mapping exercise and data from the National Student Survey, tells us that it is at UG level that there is the greatest need to provide generic ESD content and that this content needs to be taken beyond the purely scientific to ensure interdisciplinarity and buy-in across all disciplines.

Under this theme the PARiS project will collect and release at least 100 credits of teaching resources around existing ESD activities, which will then be embedded within the taught curriculum. They will be interdisciplinary and go beyond 'content' to explore links to employability, internationalisation and sustainability. The modules will include: Environmental Sustainability - supporting students in becoming champions of environmental sustainability; Education for Sustainable Development - exploring the impact of sustainability upon traditional curricula, and pedagogy both in schools and in HE; Sustainable Business - with links to curriculum and community covering business ethics and emerging models of development; Humanities - focusing on global citizenship with reference to community, world history, cultural awareness, community engagement, local and regional history and belief systems; and Personal Development - focusing graduate attributes and sustainability literacy.

These modules will be developed as part of the Nottingham Advantage Award (NAA), which is an initiative focusing upon the development of graduate attributes (personal and academic development, sustainability literacy, research and digital literacy, global citizenship). Created for undergraduate students, it aims to develop the kind of competencies that employers are looking for in talented new graduates. The NAA is available as an optional programme for undergraduate students at Nottingham and its popularity is demonstrated by the 1,400 students who have opted to enrol since its launch in 2008. Through the collection and inclusion of third party OER and a specific overview and referencing of OER throughout the five modules, this theme will ensure the wider exposure to OER for all students that enrol on the NAA programme. Delivery of these modules to the student community will also be facilitated through the U-Now website, providing exposure to wider OER materials. Case study evidence suggests that when this happens good results are obtained not only in learning but also in cultural awareness and student autonomy. The case study evidence also suggests that U-Now can help students learn how to evaluate web based academic resources and that it encourages students to use resources created by other subject areas to widen their educational experience. This project provides a clear opportunity to provide the UG student community significant exposure to OER, U-Now and the educational benefits that they offer. This theme will also engage this new community of OER users, to identify requirements and to inform decisions about models of publication and re-use. This data would also be beneficial to those in the wider education sector.

Two of the modules that will be released under this element are existing modules that will be enhanced through the collection of third party OER. Three of the modules released under this

element will be newly created modules which will also include collection of OER. This will empower the academics and students that are involved to create learning materials with openness in mind at the outset of the design process. This is something that was recommended by many UKOER phase 1 projects as a way of embedding sustainability around OER processes. It will also provide data back to the community on the benefits and barriers of creating new OER, assessed against the model of publishing existing materials as OER. It will offer a model for sustainable and open module design that will be cascaded within and beyond the institution. In addition to the 5 x 10 credit modules (50 credits) that will be developed under this element, a further 50 credits of existing NAA modules will also be openly published. This additional aspect also benefits the HE community as a whole by facilitating the sharing of a total of 100 credits of this successful programme focussed on the development of sustainable practice at a time of limited resource availability across the sector.

Sustainability within this theme is demonstrated by the embedding of these materials within the taught curriculum and by the commitment of the NAA management team to continue open publication of NAA materials post funding. This continued publication supports the NAA team in expanding provision across Nottingham's international campuses, a key strategic driver for the University as well as supporting sustainability provision across the sector. Sustainability is also demonstrated through the increase in open content literacy that will be realised in the staff and students that are involved in the content design and use of the published materials.

The deliverables associated with this theme of the project are:

- Collect and release 5 x 10 credit UG modules (50 credits) of OER on sustainability.
- Openly release 50 credits of existing Nottingham Advantage Award modules.
- Explore and enhance understanding of sustainable practices/values in differing cultural contexts through our international community of staff, students and partners.
- Provide case study examples of sustainable practice through podcasts, blogs and other reusable learning resources which will be shared openly across HEIs.
- Further cement a community of ESD advocates within the University to promote the aims of ESD and provide a model of sustained release of OER beyond the funding period.
- Disseminate ESD via publication and conference events.
- Create promotional materials to support the take-up of ESD in the wider HE community.
- Evaluate the project with the target audience, summarising achievements, issues and challenges, and an assessment of the benefits realised.

The early stages of this theme have involved assembling the team of academic content creators who will adapt the existing modules and create the new ones. Early indications are that for some subject areas (Engineering, Geography) there are a number of third party OER sources that will facilitate the collection and inclusion of OER into the modules. For other areas, such as Peer Mentoring, the availability of third party OER appears to be less prevalent.

### **Mobile Xerte**

Mobile Xerte is a new addition to the award-winning Xerte Project's suite of tools for Android and iOS devices. Mobile Xerte is built around the concept of 'learning spaces', or collections of open resources that can be subscribed to using the application. Learning spaces can also be created using Mobile Xerte, and shared with other users, allowing content to be readily adapted and re-purposed amongst peers, or between teachers and their learners. The application has native support for a subset of content authored using Xerte Online Toolkits, and is open source software, released under the GPL.

The PARiS Project is using Mobile Xerte to share the third party OER that has been collected as part of the design process. At the core of PARiS is the requirement to collect third party OER and incorporate it into the resources that are being created. This building block approach will help assess whether cost efficiencies can be realised through re-use and provide valuable data on the benefits and barriers to including third party content. To enhance this aspect of the project playlists of OER content for each module will be created and made available in Mobile Xerte. The playlists will include all of the individual third party OER resources that have been collected as part of the module design. In addition to module level playlists, there will be an option for users to subscribe a project level playlist, which will provide access to all of the third party OER collected in one location. Subscription to playlists will be possible through URL or QR code.

### **Summary**

To date (February 2012) the project is in the early stages. The bulk of development activities are underway with all resources being released at least three months before the conclusion of the project. This will ensure that a detailed evaluation can be undertaken which is essential to the success of the project. A publically available report of the project will be available in October 2012.

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# **What HumBox did next: real stories of OERs in action from users of a teaching and learning repository for the humanities**

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## **Abstract (500w)**

The HumBox is an online space for managing and sharing teaching and learning materials related to the humanities. Membership of the site is open to all and is entirely voluntary. It was created, as part of the HumBox project, with funding from phase one of the JISC OER programme and was kick-started by a collaboration of ten different UK HE institutions and 4 Higher Education Academy Subject Centres. Within the space of the project year (2009-2010), HumBox caught the imagination of many UK academics and by the end of the funding period it had a healthy 1100+ resources and 200+ users. It had become the hub of an active community of humanities professionals who were engaged in re-using and reviewing each other's resources and making connections with each other through the HumBox system: it had become a teaching and learning repository that people actually used.

Once project activities and funding had ceased, HumBox was driven almost entirely by the activities of its registered and unregistered users, and it continued to grow steadily. The number of registered users has more than trebled since the launch of the site in February 2010 and resources continue to be contributed at a slow but steady rate (currently 1514). The site is viewed by an ever-increasing number of visitors from around the world and the community activities of depositing, re-using and reviewing others' resources continues. HumBox remains persistently popular.

This paper will report the findings from a range of monitoring activities which sought to understand how the HumBox and its resources were being used, and whether such usage could indicate changes in teaching practice. Monitoring activities included web tracking, a survey and follow-up interviews conducted with HumBox users exploring motivations for using the site, the different ways that users were engaging with the site and for what purposes. It will summarise the answers given to illustrate why people have responded positively to HumBox and the notion of publishing their work openly, and describe the areas of community activity which have not been adopted as broadly as the original project team hoped (e.g. reviewing/commenting). It will give a selection of case study examples of both resource usage and user experience to illustrate the range and variety of approaches to OER which can be facilitated by one repository.

The paper will conclude by analysing how responses in user feedback indicate changes in teaching and academic practice and by reflecting on how these responses relate to aspects of the repository design to lead to HumBox's continued success as an academic community repository.

## **Keywords**

HumBox, humanities, OER, open practice, repository, teaching, learning

## **Introduction**

The HumBox is an online space for managing and openly sharing teaching and learning materials related to the humanities. It contains materials primarily, but not exclusively, for study at Higher Education level. Membership of the site is open to all and is entirely voluntary. It was created, as part of the HumBox project, with funding from phase one of the JISC OER programme and is the result of a collaboration between four Higher Education

Academy humanities Subject Centres (Languages, Linguistics and Area Studies; English; History, and Philosophy and Religious Studies) and a consortium of 10 partners in Humanities Departments, Schools and Research Centres in a range of UK HE institutions, as well as relevant Subject Associations. Within the space of the project year (2009-2010), HumBox caught the imagination of many UK academics and by the end of the funding period it housed a healthy 1100 resources and could claim more than 200 registered users. It had also become the hub of an active community of humanities professionals who were engaged in re-using and reviewing each other's resources and making connections with each other through the HumBox system: it had become a teaching and learning repository that people actually used (Dickens et al, 2010).

Once project activities and funding ceased, HumBox continued to be managed by the LLAS Centre, and hosted and maintained by the School of Electronics and Computer Science at the University of Southampton. Management of the site has been light-touch and has mostly consisted of responding to enquiries. Technical maintenance of the site has been ongoing but low-key and a limited number of technical enhancements have been implemented since the end of the project. However, the HumBox website and its community have continued to grow steadily and this growth is driven almost entirely by the activities of its registered and unregistered users. The number of registered users has more than trebled since the official launch of the site in February 2010 and resources continue to be contributed at a slow but steady rate (currently 1531). The site is viewed by an ever-increasing number of visitors from around the world and the community activities of depositing, re-using and reviewing others' resources continues. HumBox remains quietly but persistently popular.

## **Method**

Over the last year, the HumBox team has used a range of methods to monitor the HumBox in an attempt to understand who is using the site and its resources, and for what purposes. It was hoped that an analysis of usage data may shed light on how open educational resources are being used 'in the wild' amongst the humanities community, and whether engagement with open educational resources through the HumBox had led to identifiable changes in teaching practice.

The methods used to monitor and assess usage of HumBox were:

- Monitoring of statistics inherent in the humbox.ac.uk website itself
- Tracking through GoogleAnalytics
- Data-mining 'through the back door' of HumBox.
- An online survey was distributed to all registered users of the HumBox, publicised through the HumBox project network and posted on the front page of the HumBox site. The survey had 55 respondents.
- Interviews with a small group of registered HumBox users. Telephone or face-to-face interviews were conducted with thirteen users who had deposited resources in the last year. Six of these were members of the original HumBox project group and seven were not.

## **Findings**

Data from GoogleAnalytics (Table 1) and from HumBox shows that the number of registered users has more than trebled since the launch of the site in February, 2010 (+351). The majority of these new users have joined the site since the end of the JISC-funded HumBox project, which indicates ongoing, voluntary interest in the HumBox and implicit support of its aims and ethos.

The number of unique visitors to the site and pageviews of the site have increased considerably over the two years since the launch of the HumBox and average at 1642 per month and 8632 per month, respectively. Visitors come from a wide range of countries (152) and from a range of sources, mostly via Google or direct entry. The presence in the top ten (sources of visitors) of the search engines Google, Yahoo and Bing, and the UK national repository, Jorum, indicate that HumBox and its resources are becoming easier to find and are being referred to in commonly-used websites. This indicates that the site continues to be popular and is reaching an ever-wider audience.

Table 1: Data on usage of HumBox (Googleanalytics and HumBox)

	Totals from inception of site (Aug 2009*) to official launch of site, Feb 26 <sup>th</sup> 2010	Totals from launch of site (26 Feb, 2010) to Feb 28 <sup>th</sup> , 2012
Registered users	153	591
Number of 'resources' deposited**	1005	1531
Unique views of the HumBox site	64,662	207,187 (average 8632 per month)
Number of countries yielding visitors to HumBox	131	152 (top five: UK, USA, Canada, Germany, Australia)
Number of unique visitors to site	7867	39,403 (average: 1642 per month)
Source of visitors	Visitors came from 150 different sources or media (Google is 1st and direct entry 2 <sup>nd</sup> ).	Visitors came from 661 different sources or media (Google is 1st and direct entry 2 <sup>nd</sup> )

\* The HumBox site was put online and used for the HumBox project from approximately August 2009. The site was used during the project by participants, and was actively promoted. It was officially launched for open use on 26<sup>th</sup> February, 2010.

\*\* A 'resource' in HumBox can consist of multiple files – so the number of resources deposited is not an accurate reflection of the number of actual files in the system which could be shared and re-used.

Recent deposits to the site were made by HumBox users of long-standing indicating a continuing interest and relationship with the site. There are also recent deposits from new users. There have been 526 resources added since the end of the official launch of the site. The total number of items in HumBox is actually far greater than the system cites – at approximately 3000. This figure differs from the number of cited resources, because some items may consist of several files, but under HumBox terminology, they would still be considered as one 'resource'. 341 items have been created but never published 'live' to the world. It is not clear why users have chosen to do this, and this is an area which needs further investigation.

If Google and HumBox data is analysed over the time period from the launch of the HumBox site in February, 2010 to February 2012, it can be seen that certain resources have been particularly and persistently popular. Interviews with the creators of these resources suggest that the reason for their continuing popularity is that they are actively used in teaching, either by direct reference to the resource in HumBox, or referred to in class and then sought out by students working independently. Depositors made clear from an early stage in the creation

and use of HumBox that it would be tool for publishing material for their students to use, particularly videoed material. [See below for case histories on selected resources].

Two resources stand out in terms of numbers of individual views and downloads: ‘American Pop Culture 3.2’ ([www.humbox.ac.uk/2313](http://www.humbox.ac.uk/2313)) and ‘A History of Logic’ (formerly known as ‘The Logic Gallery’ [www.humbox.ac.uk/2192](http://www.humbox.ac.uk/2192)) (Borthwick, 2011). Both resources were deposited by a user living in the USA and they register consistently high views and downloads. The resource ‘A History of Logic’ proved wildly popular in the first few year of HumBox’s life, but downloads and views of this resource have recently declined. This may be due to a change in the way the creator of this resource presents his material in an attempt to realise commercial gain from it. [See below for the case history of this resource].

### **Findings: survey and interviews**

An online survey was distributed to all registered users of the HumBox, publicised through the HumBox project network and posted on the front page of the HumBox site. The survey had 55 respondents (Borthwick et al, 2011). This small sample yielded interesting and positive results in regard to usage of OERs amongst the humanities community, although it should be noted that any respondent to such a survey is likely to be favourable to the HumBox and to the concept of open practice in general.

It was heartening to note that the most popular way that users have found out about HumBox was from ‘the recommendation of a colleague’ (30.9%). This indicates that knowledge of and ownership of the HumBox site is moving beyond the original core project group. Of those who have registered for an account, more than half (50.9%) have uploaded resources, which is a positive sign that users are attracted to the site, understand its ethos and feel encouraged to participate in an active way by sharing their teaching materials. Similarly, more than half of respondents (51.9%) indicated that they had downloaded and saved HumBox resources for their own use. This is a high number given that HumBox’s preview screen gives immediate accessibility to a resource without the need to download it. However, when asked if respondents had used any HumBox resources directly in their own teaching, the majority (78.2%) had not. This seems to indicate that users are discovering and downloading resources to keep for future use, development or interest rather than with a specific and immediate teaching purpose in mind.

Of those who responded that they had used HumBox resources directly in their own teaching, 50% noted that they had downloaded and edited the resource for their own context. It is this kind of activity that the OER movement hopes to encourage on a wider scale, but our survey data indicates that within the HumBox community, editing and repurposing is still at a fledgling stage. A small sample within the main group of respondents indicated that they have sent students directly to HumBox to look at resources in situ (20.7% in class, and 24.1% for independent study).

When questioned about the nature of the resources users were uploading to the HumBox, 43.9% of respondents indicated that their resources had been used previously with students (i.e. were ‘tried-and-tested’). However, a significant proportion of respondents (39%) indicated that such resources had neither been used, nor were intended to be used (in this academic year). This suggests that users may be sharing fresh, experimental materials or materials that have been created and not used, but would otherwise have been ‘locked away’ in their computer. This is a positive sign that perhaps HumBox users are embracing the ethos of the site, and are keen to share teaching and learning materials of all kinds, and also that users are engaging with the site as discipline professionals, intent to make an impact through the materials they have created either recently or in the past.



## Reasons for using HumBox

The survey and interview asked respondents to indicate why they used HumBox and how they perceived its usefulness. A summary of responses is listed below:

- to see what other institutions and practitioners are doing
- to share practice on standard aspects of learning e.g. study skills
- can find useful resources to adapt for own students
- helps practitioners reflect on their own teaching
- a good way to get ideas to improve/enhance one's own practice by seeing new/innovative ways of presenting material
- a good way of keeping up with developments in the discipline
- to store collections of related material and share it publicly (e.g. at conferences)
- good for early career researchers to demonstrate teaching experience and communicate research work: *"my main purpose for using HB was self-promotion. I was in a research fellow position when I joined and wanted to move to a lectureship position. I saw HumBox as an opportunity to advertise my teaching (and research) and make examples [...] available to potential employers."* - an interviewee
- opportunity to see things from the perspective of other humanities disciplines
- offers a more targeted search return for educational copyright-clear material than e.g. Google
- enables teaching to have a public dimension both in terms of publishing teaching materials and engaging students in publishing their own work
- to contribute to open practice: *"I like sharing and I don't like things locked behind passwords"* – an interviewee

Respondents noted a wide variety of examples of how HumBox resources had inspired or influenced their work, causing them to create new material, understand new methods or adapt their existing resources e.g:

*"How to use online dialect resources, I would have found this difficult to do myself, [as I'm] not as technically advanced."*

*"The Goethe podcast (such as resource 739)...a text in German, read by a German native speaker with a translation. After seeing this, I produced the same sort of exercise for French politics."*

*"I have used a ppt on sociolinguistics as a springboard to design resources which are relevant to my students."*

*"The recorded lectures of English History were very interesting and are making me think that I need to do the same. The resources with Articulate have also caught my attention as they look extremely professional and very suitable for dissemination to wider audiences. The Hull Fair collection has given me ideas for my work. Also, some of the simplest resources, for instance a set of questions for discussions in seminars or film analysis (English), or pictures of historic sites or symbols (French) helped me to reflect upon my own teaching and I have used more these strategies."*

Feedback such as this indicates that HumBox is being used in dynamic and interesting ways to support teaching practice, and that cross-disciplinary sharing is also taking place. Users clearly seem to find the site a generally rich source of ideas and resources.

## Comments and reviewing

Tracking shows that the use of the ‘comments’ feature in HumBox continues to be underused, with no new comments put on resources in recent times. The use of this feature is still in infancy and although there are a considerable number (429) of comments in the system (Borthwick, 2010), they exist on only 341 resources, and such activity is largely confined to members of the original HumBox project team.

There are two resources which have both garnered six comments each, and both of them illustrate the purpose of reviewing in the context of OERs:

- /76/ is a screencapture video on plagiarism. Comments indicate where improvements might be made to the resource, but also how it has been used by others, e.g. one lecturer has integrated it into a first-year study skills course
- /469/ is an interactive online task. Initial comments on this resource flagged up technical problems preventing users accessing the resource, and this led to a response from the original depositor, which in turn allowed others to access the resource and suggest alternative ways that it could be used.

Data from the survey complements the finding that use of the comments feature is not common practice: a majority of those who responded to the question indicated that they had not made any comments/reviews on any HumBox resources (80%) and similarly, only 28.9% noted that another user had made a comment on *their* resources.

However, where comments have been made on a resource, survey respondents indicated that they found such comments to be useful and have modified the resource by, for example, checking hyperlinks, adding to the description field, or editing the resource in a minor way, e.g.

*“I enhanced the format of a video I had uploaded following feedback that its file size was restricting access and use.”*

Another respondent noted:

*“I have polished up the resource if needed and I have also engaged in discussion and further dissemination. Given the success of one of them, I presented it for an award, which I managed to obtain!”*

These kinds of responses point to the usefulness of the feature within HumBox and how it can have a positive impact on teaching practice. It is also interesting to note that when interviewed on this subject, HumBox users were unanimous in their support for the ‘comments’ feature, describing it for example, as “one of the best parts of HumBox as it allows users to get more out of resources” and “very useful.” Yet, most of these users admitted that they rarely (if ever) used the feature themselves – the reason most often given being that they did not feel personally inclined to make comments on Web 2.0 sites generally, and thus did not on HumBox. This presents an interesting conundrum to the HumBox managers: how can this positive attitude to comments/reviewing be converted to action?

## Selected case histories of HumBox resources

### 1. A History of Logic [www.humbox.ac.uk/2192](http://www.humbox.ac.uk/2192)

This resource was added to the HumBox on 6<sup>th</sup> May, 2010, just after the HumBox project finished. It is a book and was initially called ‘The Logic Gallery’ (a name it retained until June 2011). It comes top of a google search conducted under its former name, but not under its new name. The resource was added by a professor of philosophy in the USA, and is one of

three resources that he has deposited in HumBox. Data indicates that this resource is by far the most popular on HumBox, in terms of views and downloads.

The depositor engaged with HumBox as an experiment: he was keen to see whether users found his resources on HumBox and whether it would be a way of promoting his work. It immediately seemed as if HumBox *was* a way of publicising his resources, as statistics on his profile page indicated that the resource was being heavily viewed (Borthwick, 2011). He found this to be pleasing but noted:

*“I’ve never (**never once** [sic]) had any feedback from any who has viewed or download LG. Strikes me as quite odd.”*

Nonetheless, given the traffic that the resource seemed to be getting on HumBox, the depositor decided to try and realise some income from the resource. He replaced the resource on HumBox with a small extract and an indication of where the book could be purchased in full. The book has been made available online through a print-on-demand site and is linked from another UK website <http://evans-experientialism.freewebspace.com/marans01.htm>. To date, he has not sold any copies of The Logic Gallery to people other than his own students (such royalties are donated to charity). This is a situation he finds

*“disappointing...It was more gratifying when several thousand took it gratis off Humbox.”*

He has made no other attempts to publicise his resources beyond the website mentioned above and has no intention of removing or altering his other HumBox resources (one of which is also highly popular). The Logic Gallery will remain online as a purchasable resource in the immediate future, with an edited extract on HumBox.

## **2. Case History: The Case of Lorca: video on regional autonomy in Spain, video 16** [www.humbox.ac.uk/1646](http://www.humbox.ac.uk/1646)

This video was added on 1<sup>st</sup> February, 2010 and is part of a collection of 17 videos covering the topic of regional autonomy in Spain. It was deposited by a senior lecturer in Spanish at Leeds University, who was part of the original HumBox project team. Data indicates that this resource is one of the most viewed on HumBox. Further investigation reveals that its popularity is due to its integration in the depositor’s teaching and other professional activities this year.

The depositor directs his own students to the videos to use in independent study, and he focuses on certain elements during lectures to draw out linguistic points of learning. He also links to the video collection from his institutional publications page. This is reflected in the healthy viewing statistics for each video. However, video #16 has had more attention than the others and this is because it became the focus of an outreach activity to language students in Liverpool as part of a student conference on Luso-Hispanic identities. The activity involved student preparation of a learning activity revolving around video #16, and then active practice during the conference. The depositor also created an assessed task related to the video (creating a newspaper article based on it) which tutors required students to do. In this way, the resource has become part of the teaching in an institution other than the depositor’s own – and has offered ideas to other professionals on teaching methods and tasks. The collection of videos remains on HumBox as a resource for further use by Spanish teachers across the UK.

## **3. Case History: Video demonstrating plagiarism detection using the Turn It In online service** <http://humbox.ac.uk/76/>

This screencapture video was one of the first resources deposited on the HumBox site, on 21<sup>st</sup> June, 2009. It was created by a learning technologist at the University of Warwick and it

describes how the plagiarism detection software ‘Turn it in’ works. Although it registers comparatively fewer hits than the most popular resources in HumBox (it registers 1896, as of February 2012), it is consistently flagged up by users as a highlighted resource. It also has the most comments of any HumBox resource.

The resource proved popular immediately and this can be seen from some of the comments placed on the resource:

*“This is one of the first resources that I integrated into the Study Skills unit with first year undergraduate students. Students thought that the video was useful to understand what plagiarism is and, crucially, how it can be detected. It triggered a good discussion about why and how we expect students to use and present their sources.”*

*“I really appreciate you having posted this video on Humbox. I’ve linked it to a Facebook group site designed for our incoming first-year History students at Loughborough Uni. I emphasised to the students that we prefer that they stopped themselves from plagiarising rather than being caught in the act.”*

The creator of the resource also received offline comments and compliments about it and made some changes to the metadata to enable others to understand the nature of the resource more easily. It continues to be a resource that is well-liked and appreciated. The creator noted that he found the experience of open publication and review so satisfying that he would like to apply this process to more of his work, and has recommended that a technical enhancement be made to HumBox, so that resources could be flagged up as ‘needing review’ in order to invite comment from colleagues. The amended resources would then be republished and would become pieces of collaborative work.

## **Conclusion**

HumBox is a popular site that continues to grow slowly but steadily in numbers of resources and registered users. Users seem to find it to be a rich site for both resources and ideas and an intuitive and attractive place through which to share their own work. A smaller number of users are engaged in deeper activity in relation to HumBox’s OERs, and are downloading, editing and repurposing resources, or commenting/reviewing the work of others. In so far as HumBox resources can be tracked ‘in the wild’, it is clear that they are being used in diverse ways both directly with students and to inform teaching practice indirectly.

The persistent popularity of HumBox and the kinds of activities reported by users of the site seem to clearly demonstrate the value of open access in higher education, and particularly in the humanities. The variety and range of activities reported by HumBox users at all levels, from simply using the site as inspiration for ideas; to reviewing others’ work; and then to actually downloading, re-using and re-publishing materials indicates that it is possible for open access to become an integrated part of academic practice. Indeed, this is already happening for many HumBox users, who report an increasing consideration of issues around open practice when creating new materials. The experience of some users, for example case history 3, points to how the HumBox can facilitate collaborative work for the benefit of the whole sector.

The strength of the HumBox is, without doubt, its community-led approach: it was created and is driven by the UK humanities community. It is a site which engages individuals as educational practitioners and asks them to become involved in open, online activities which are familiar from their usual working lives, such as collaboration, sharing good practice, reviewing, collegiate working cross-discipline or profile-raising. Thus, the trust that this community has amongst its members seems to have been extended to the HumBox and is

evidenced by the continual willingness to share resources on the site. In this respect, it is significant that users describe HumBox as “a practitioner tool” or a “social networking site” rather than a ‘repository,’ as this reflects how they understand and approach using the site. As one interviewee noted: *“I see the HumBox system as wider than the site itself – we are engaged in the community...It is worth reflecting on the pedagogical tool that Humbox is – it is not just a repository, an archive...you don’t want people to think of it as a repository – it is active and teaching materials should be living things.”*

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**“Why would you do it, ... would a student actually be interested?”  
Understanding the barriers and enablers to academic contribution to an  
OER directory.**

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**Abstract**

Many institutions around the world now have Open Education Resource (OER) directories. These vary in scale from almost the entire universities courses online, to a collection of some materials from a range of faculties, or in some cases, a series of exemplary lectures. Academic responses to contributing their materials also vary from those who have always shared and are happy to take the next step of adding teaching resources to an OER directory, to those who want to guard their intellectual property and see no reason why anyone else would want access to their teaching materials.

This paper will explore the reasons for and against sharing teaching materials as OER. A pilot study involved interviews with three academics who had not contributed OER at the University of Cape Town (Cox in press). In this paper three academics who have added OER to UCT OpenContent were interviewed and the analysis of those interviews will be compared to the earlier three. Activity theory is used as a lens to highlight key tensions in the institutional system that seems to prevent academics from adding their materials. It also frames the location of enabling factors, such as colleagues that encourages sharing, in the University system.

The focus of this paper is to investigate the change of practice (creating and contributing OER) and resistance to the change of practice by academics.

With respect to the contribution of teaching materials, it seems that it is not only the enabling or constraining factors within the system that influence the individual, but also what the individual brings to the system that is key. The individual inclination seems to be more powerful than the current disjunctions in the UCT system. Those who do not add OER also do not place value on contribution and even with the offer of technical support they are not inclined to add OER.

**Keywords**

Activity theory, Change of practice

**Introduction**

During the last decades of the 20<sup>th</sup> century Higher Education institutions across the globe changed their models of teaching to include technology. As with any change of practice some institutions forged ahead with top down approaches while others changed gradually and in ad hoc ways. Innovators and the early majority lead the way and the majority followed (Cox 2008). Academics became aware of the obvious benefits of technology and those who were reluctant to change were nagged by their students as they needed all courses to be online to organise their academic lives properly (Marquard, 2009).

Now in the 21<sup>st</sup> century we see a new change in practice where institutions across the globe are sharing their teaching materials as OER or OpenCourseWare (OCW). Almost all of the top 50 institutions across the globe have directories or repositories where they are sharing their materials (<http://onlineuniversityrankings2010.com/2010/open-edu-top-50-university-open-courseware-collections/>). As with the introduction of technology the approaches of institutions

vary from top down, well-funded big units to small groups of practitioners who are passionate about sharing knowledge.

The benefits of using Learning management systems (LMS) and other forms of technology became apparent to academics in higher education institutions. The take up of technology varied and some institutions and individuals took longer than others. For many academics and institutions the benefits of OER or OCW are not yet apparent and therefore there is no need to share (Gourley and Lane, 2009).

Previous work included three interviews with faculty who had not contributed resources to UCT's OpenContent directory (Cox, in press). This paper will include the analysis of three additional interviews with academics who have added materials to OpenContent. The analysis of all the interviews will be compared in order to assemble an interesting snap shot of some of the enablers and barriers to this particular change of practice.

In this study Activity Theory (AT)(Engeström, 1987) has been used as a lens in order to frame the complex reasons why academics have chosen to add teaching materials to the OER directory at the University of Cape Town (UCT). AT and its principle of contradiction is a versatile and insightful lens which has been used to analyse some of the barriers to contribution. In this study we will attempt to use AT to frame the enabling factors.

### **Context**

UCT has an OER directory, UCT OpenContent, which was launched on 12 February 2010 and currently includes more than 170 resources which consist of over 1000 downloadable items. The Centre for Educational Technology (CET) at UCT developed the directory and is now responsible for the day-to-day running of the site. CET supports teaching and learning using technology and the objective of the UCT OpenContent directory to share teaching and learning materials with fellow academics and students at our institution and also across the country, continent and world, is aligned with CET's mission. The UCT OpenContent directory was initially funded by the Shuttleworth Foundation. It has been sustained through inclusion of the management of the UCT OpenContent in the portfolio of one permanent staff member of CET (Hodgkinson-Williams and Donnelly, 2010).

Contribution to the directory by the academics is voluntary. At present the institution has no policy or strategy around sharing or openness. There is no financial or status reward or recognition in annual performance reviews for contributing teaching materials to UCT OpenContent or any other open platform. In spite of these constraints many academics, ranging from young lecturers to A-rated research professors across all faculties at the institutions, have gradually added content to the directory. Those who have added materials form a small percentage of academic staff. In order to make the UCT OpenContent directory a hub of activity where there is a flow rather than a trickle of resources, there is a need to understand what enables academics to add and where the barriers are and how these barriers can be overcome.

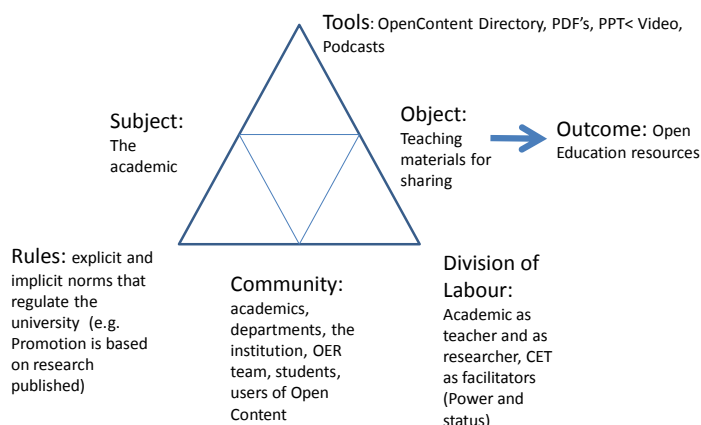
CET's objective is to share as many UCT teaching materials with the rest of the world as possible. We have used a pride-of authorship model where the quality of the content of the resource is the responsibility of the author (King & Baraniuk, 2006:5). The content created is African content and it is important for us to share this content locally and internationally. Dulle and Minishi-Majanja (2009) note that Africa only generates 0,4% of global content and adding resources to UCT OpenContent will be a first step in redressing this imbalance.

### **Theoretical framework**

Third generation Activity theory ( Engeström, 1987) was used as a lens to analyse three interviews with UCT academics who have contributed to the OpenContent directory. The

generic labels for the nodes (elements) in the system developed by Engeström et al, (1991) are shown on the activity system triangle (Figure 1). These generic nodes are labelled below according to the activity system under study in this research. The activity in this system is creating and/or adapting teaching materials.

Figure 1: Activity system triangle (Engeström, 1987)



One of the key principles of Activity theory as a dialectical theory is the concept of 'contradiction'. Contradictions are historically present in Activity systems. When a new activity is introduced into the system internal 'primary' contradictions result in "aggravated secondary contradictions where some old element collides with a new one..." (Engeström, 2001). Contradictions are present and are crucial driving forces of transformation (Engeström and Sannino, 2010). Articulating the location of these contradictions in the system and overcoming them can transform the activity.

### OCWC Literature review and previous work

In a review of the literature there are recent studies that discuss reasons why academics should make resources open (Beggan, 2010; Geser; et al., 2008; McAndrew et al., 2009; Schaffert, 2010; Sclater, 2010a; Sclater, 2010b)). Many of these studies also highlight the concerns of academics and the barriers to sharing teaching materials openly. These articles include the analyses of interviews or surveys with staff at various institutions.

The key motivations for academics that emerge from these studies include: a) altruistic motivations, b) commercial motivations and c) transformational motivations (Sclater, 2010a). Altruistic motivations are inspired by the premise that everyone has a right to education and therefore learning should be available to all, and "... it is widely accepted that individuals' life chances can be enhanced through education ..." (Sclater 2010a p: 487)

The case for this motivation is stronger in developing countries as access to education is limited (university spaces) and journals and books are very expensive. Stacey (2007) also argues for other benefits for learners such as access to a bigger range of resources which encourages learners to explore further into their fields in an autonomous and self- reliant way. In the case of commercial motivations the argument here is around raising the visibility of the institution thereby enhancing its branding (Johnstone, 2005). There is a strong marketing incentive to OER. This may even help to recruit students (McAndrew et al, 2009). The other



commercial argument for OER is that sharing university resources is a better use of tax-payers money (Geser, 2007).

Transformational motivations are about a fundamental change in the way education at institutions have functioned. “The OER movement has generated its own momentum” and many institutions are joining this movement to be part of a ‘feel-good factor” (McAndrew, 2006)

These are all given as key motivations and in combination with an enabling environment where dedicated units at institutions assist academics to add resources we see examples of successful open endeavours (e.g. MIT, University of California, Berkeley, Tufts and Open University).

There are a number of concerns noted in the literature. The key concerns include:

- Academics are concerned that their materials are not good enough (Winn, 2010)
- Academics are concerned about the time it takes to prepare materials (Lee et al, 2008)
- Copyright infringement is a concern (Lee et al, 2008, Beggan, 2010)
- There is scepticism about the value of OERs (Lee et al, 2008)
- There are concerns that some disciplines where practical skills are required are not suited to OERs ( Lee et al, 2008)
- Academics are concerned that there is a lack of acknowledgment or promotion for contributing high quality teaching materials (Beggan, 2010)
- Academics are concerned that poor quality materials will damage the institutions reputation (Sefton, 2010)
- Some academics were concerned that students would no longer come to lectures ( Beggan, 2010, Sefton, 2010)
- Concern that materials cannot be delivered in isolated form without tutorials and other forms of interaction ( Sclater 2010b)

In Cox (in press) these concerns were placed using AT onto an activity system triangle in order to locate the concerns within these institution. Cox (in press) analysed 30 concerns and 50% of these related to ‘rules’ embedded in university systems (both explicit - clearly stated and implicit - implied rules of academic institutions). The explicit rules are easily identifiable and certainly the key rule in research institutions around the world where promotion is based on research and not producing quality teaching materials. The implicit rules are unwritten and therefore more difficult to address or change. These implicit rules relate to the quality of teaching materials and whether an academic should use another lecturer’s materials. Time, workload and cost were concerns related to the ‘division of labour’. The rest of the concerns centered around the “community”. The community represents not only colleagues and peers at the institution, but also the end users of the OER’s.

The in-depth interviews revealed different concerns or contradictions depending on the subjects’ views and interests. All three academics who had not contributed had specific concerns:

1. Pedagogical concerns around purpose and use of OER (Implicit Rules)
2. Concern about the quality of the materials and their readiness to go Open (Implicit Rules)
3. The influence of colleagues (Community)

These concerns are similar to those found at other institutions listed above. The views of institutions and the academics themselves around the value of OER are crucial to their contribution. The interviews revealed that the academics did not place any value on adding

OER. For these three individuals it seems not contributing was the result of both a lack of motivation and other factors in their contexts that stopped them adding teaching materials. Some interesting new concerns surfaced around a lack of freedom to teach spontaneously if all materials were open. General concerns around a lack of understanding of the purpose of OER. And lastly, one academic felt he needed a personal invitation.

Andersen (2010) in an article on Open Faculty, argues that a “nature” influence is the individual’s innate inclination to share. She categorises two ends of the scale: “the keepers”, faculty who ask themselves: “why would anyone outside my course want to know what I think?” (Anderson, 2010) and at the other end of the scale are the “... sharers who believe their contribution to the conversation, content and/or community is invaluable ...” (Anderson, 2010:45). The “nurture” influence is “how strongly the person feels a moral responsibility to share freely with his or her community”. She adds that “... the natural inclination to sharing cannot easily be altered; the moral responsibility to share can be influenced by surrounding culture ...” (Anderson, 2010). Changing a person’s natural inclination, she suggests, can be done if an institution places value on openness.

In this paper we will consider the results of the three interviews with contributors in order to contribute a more theorised approach to analysing academics’ complex reasons for adding OERs.

### **Research design**

This paper includes the analysis of the transcriptions of three in depth interviews with academics who have contributed content to UCT OpenContent. Purposive sampling, “...a non-representative subset of some larger population (Cohen, Manion and Morrison, 2007:114) was used to identify these three individuals. The individuals come from different faculties and therefore represent different contexts across the institution.

The transcriptions were analysed using an Activity Theory (AT) framework. The small sample is a case study of individuals and is not an attempt to generalise across the institution. The discussion will include a comparison with other interviews analysed using AT (Cox, in press).

Academic 1 has added five resources, four textbooks and one teaching tool. Academic 1 is a Professor in the Commerce faculty. Academic 2 has added a series of lecture recordings and a set of course materials. He is a Professor in the Science faculty. Academic 3 collaborated with a colleague to add resources, a set of articles and a course. The academic interviewed is a researcher who is assisting and co-teaching with a professor. At the time of the interview they were members of the Humanities faculty at UCT. Unfortunately they have now moved to a different institution in South Africa.

The findings from the analysis of these interviews will be used to inform a much larger study which should potentially highlight any patterns or overlaps in the contradictions to creating OER that emerge.

### **Findings**

All three academics felt that they are sharing for altruistic reasons. In terms of the activity triangle, a subject’s altruistic tendencies are not necessarily related to any of the nodes or other key influences in the triangle. Academic 1 said “... *I think it's an obligation to share our knowledge with people who can't afford these resources...*” , “...*my key inspirations are philosophical and social responsiveness...*” Academic 2 initially said that he contributed OER “*to get content to students...*” and then later in the interview he said “...*the year before I was appointed to UCT, I was appointed in 1998, I was doing it (sharing) already...*” Therefore for these two academics there is a direct relationship between the subject and the object and the

outcome. For Academic 3 (who collaborated with a colleague) the reasons were more complex. The academics referred to "...primary motivations for sharing were philosophical...", and also to "...increase reach ability of resources that were previously only available in a few places...". The altruistic reasons were not purely related to the individuals' motivation but also to the content itself, diversity literacy which aims to educate everyone as far as possible.

Besides these underlying altruistic motivations there were other key factors that encouraged these three academics to share. The first academic stated that the fact that he was at an advanced stage in his career made it easier for him to share. The second academic spoke at length about how he had set up an efficient system for recording his lectures and making them available to students. It was his technical ability that has also enabled him to share. The third interviewee was prompted by the content itself (diversity literacy) and a grant that was received to develop the teaching materials for OER.

Interviewees were also asked what they felt are some of the concerns of their colleagues and also why they had not shared more resources. The first interviewee is a member of the Commerce faculty and he felt that in "... In the commerce faculty, [there is a] large audience. Either, if you've got large student numbers, or something that's easily internationalisable, so you can write a book that can then go worldwide, in those domains you will find that there is an option to commercialise..., where you're, talking about professional things, like law, accounting, finance people, the MBA- type business course things, so you'll find there it's a lot easier to commercialise things than it will be in philosophy or English...". He also felt that his colleagues would not be able to see any benefits to sharing. He compared the introduction of the learning management system to the OpenContent directory "... I think that's [convincing staff to share] gonna be a harder battle. Because the benefits of Vula (UCT online learning management system) were very clear, whereas the benefits of OER, are not so clear to some of my staff who are used to working in training courses which are very commercialised ..."

The second interviewee stressed time as a barrier. In his case he had elaborated about how he had used technology to easily record his lectures however he felt that his colleagues would "... be very hard to convince, you know, it's going to be hard to get everyone to buy into sort of uniform model ... you know people get stuck in their ways and I think it's always going to be limited to four or five people who are very keen to push this kind of innovation and over time, you know, depending on who you hire, you know, it could grow but I think in this department you're never going you have more than four or five people doing this kind of thing.

The third interviewee felt that not all teaching materials are easily shareable and by this she meant "... Not all teaching materials were...readily accessible in terms of structure and content ... other courses we teach are not so full of such rich multimedia materials ...' also [the course added] can stand alone as none of our other courses can ...' This interviewee also felt that the emphasis at the institution on promotion being based on research output was a major deterrent.

Despite a number of barriers related to the contexts of these three interviewees they have still gone to the effort of sharing their teaching materials as OER. These academics follow a philosophy or culture of 'sharing'. All three academics also have enabling factors in their contexts.

## Discussion

The same questions were asked of interviewees in this research as were asked in the previous study (Cox, in press). In this discussion I will combine and discuss the results. The questions

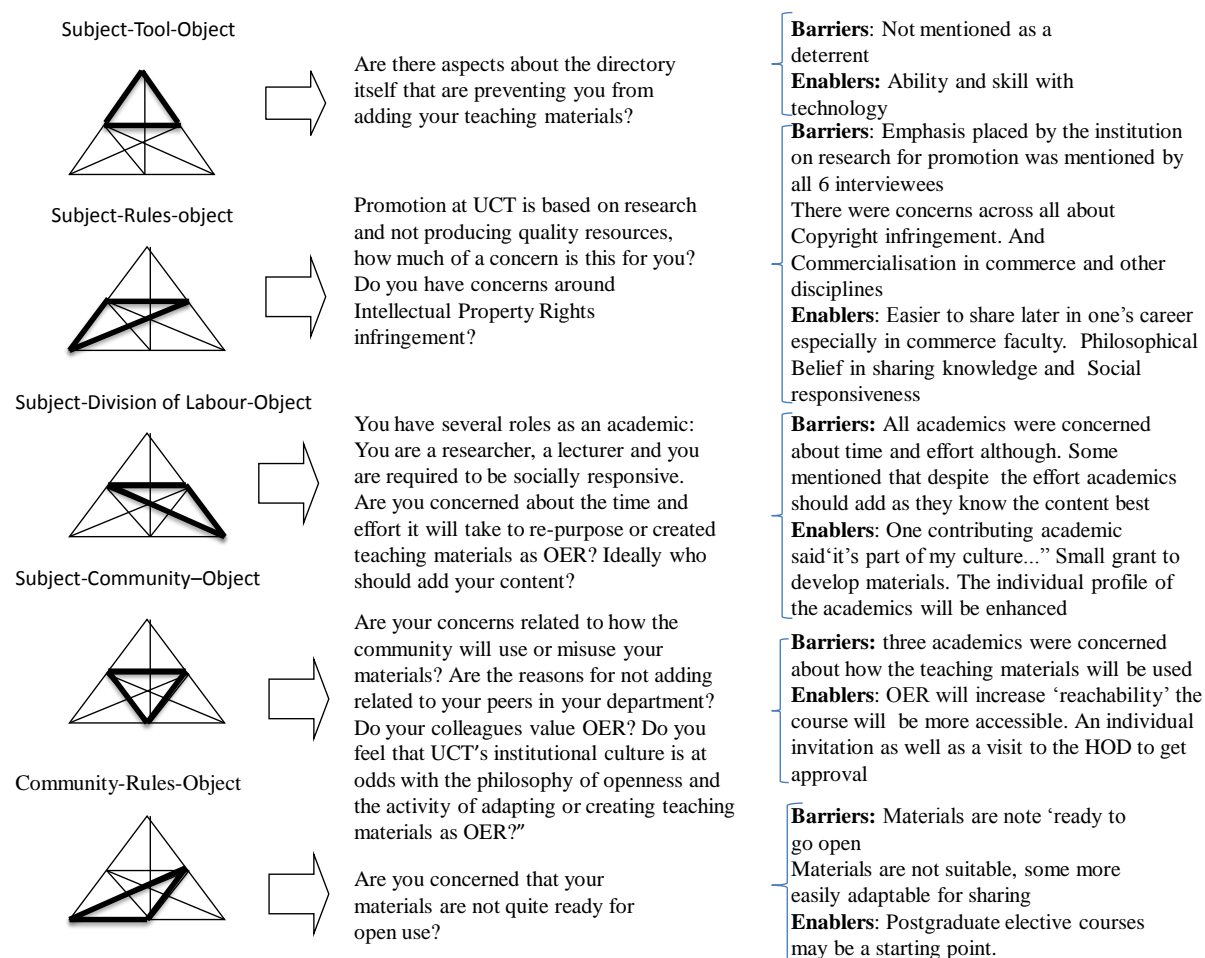
were framed around the triads or sub activity triangles and some of the key questions are listed in Figure 2.

Figure 2 lists the main barriers to contribution and where these contradictions or tensions are positioned on the AT triangle. It also lists the enablers apparent in the contributors interviews and those suggested as being possible enablers by the non-contributors.

The main barriers to contribution are around the rules of the institution around promotion and what is valued in the institution. There are also rules around the quality of teaching materials and their readiness which seem unclear and are tacit. There are also some concerns about the pedagogical use and value of OER.

The enablers include a combination of individuals who have a personal philosophy of openness in combination with other context specific factor. In this research it seems that the altruistic belief that sharing has value (Sclater 2010a) is combined with another enabler or motivation such as increased visibility. Transformational motivations are not apparent. Three enablers have emerged here. They are the importance of the stage in career in a faculty like commerce where commercialisation is a key barrier to sharing. The content of the resource itself is suited to sharing, this enabler can also be a barrier, in other words some content is simply not suited to sharing. And thirdly, the technical ability of the individual lecturer who is able to record and upload his own lectures without any support from the institution is an enabler.

Figure 2: Barriers and enablers to contribution: Questions arising from triad or sub activity triangle (adapted from Oliveros et al, 2010)



## Conclusion

AT has highlighted the need for change in many of the rules of the institution especially those concerning the lack of recognition for producing quality teaching materials and sharing these as OER.

Why do academics share? The findings of this paper suggest it is a combination of a personal philosophy and enabling factors. The three academics who are sharing were also faced with constraints that they managed to overcome because in their belief in sharing and the value they place on OER.

How do we change those who don't seem to possess a personal philosophy of sharing? This is a challenge. A round of grants to develop OER was offered after the interviews took place and specific e-mails were sent to two of the interviewees inviting them to apply and yet they did not.

Changing practice from keeping to sharing knowledge is a complex task. It seems that sharing is fundamentally a philosophical inclination: if an individual academic does not believe in sharing and see its value or the benefits then there is no need to change practise. The institutional transformation necessary is far more complex than the change that occurred to include technology in teaching. Changing the rules, tools and division of labour may open up some windows of opportunity for change but it seems that sharing is at the heart of the individual's choice to share materials as OER.

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## Poster Papers

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### **An Alternative Publishing Model for Academic Textbook Authors: Open Education and Writing Commons <<http://writingcommons.org>>**

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#### **Abstract**

Rather than assigning copyright to traditional or even nontraditional publishers for 5 to 15% of royalties, faculty can be their own publishers and own all of their materials – subject to institutional copyright restrictions. Teachers can now play the role of textbook authors, primarily because the Internet provides them with access to an unprecedented global reach. Textbook authors no longer need to work through a major publisher and their extensive networks of sales people. Unlike the past, when materials conditions required textbook authors to find publishers to print and publicize their work, they can now publish their work online and reach significant numbers of readers worldwide. Genres differ, from blogs and vlogs to social websites.

Faculty can enjoy very positive benefits from publishing their work at their own websites or other open-education spaces. *Writing Commons* <<http://writingcommons.org>> exemplifies this process. While the core text of *Writing Commons* was written by Joe Moxley, a professor of English and director of composition at the University of South Florida, *Writing Commons* now peer-reviews submissions from faculty who wish to share open-education resources. Using a Creative Commons NC Share Alike 3.0 license, *Writing Commons* enables contributors to reach a broad audience and to productively challenge the traditional genre of a textbook. By facilitating peer production, *Writing Commons* exemplifies a new kind of writing textbook, a web-textbook not written by a single author in the “old-school” way but by us, by a crowd of people out there who think we need a new more interactive, more Web 2.0ish-text; one that can be easily edited to meet your needs, and one that is readily available on your phone, PDA, or netbook. Web-textbooks like *Writing Commons* provide an expansive resource that meets the needs of any college-level writer.

Even before its “launch date,” *Writing Commons* received between 150 to 200 distinct users a day, thereby demonstrating successful “impact”—one of the traditional measures of the academic reward system. Based on Joomla, an open-source Content Management Tool, *Writing Commons* can provide analytical information regarding the number of readers for each article.

#### **Keywords**

Academic Publishing, Webtexts, Copyright, Creative Commons, Academic Reward System

Commercial textbooks are receiving loads of bad press. Rick Perry, the governor of Texas, wants to abandon traditional textbooks. Even the Gubernator—before his fall from grace – wanted to terminate them. In her description of the textbook debacle, Nicole Allen, the Affordable Textbooks Advocate for Student PIRGs, describes the problem as “Ripoff 101!” State legislatures, student government groups, and concerned faculty from across the U.S. are struggling to develop and implement policies that reduce the overall cost of textbooks, such as establishing textbook rental programs, requiring faculty to order textbooks sooner so that more used books can be purchased by the university bookstore, and in general, advocating free, open textbooks.



The flaws of the existing textbook production system are well known: exorbitant costs to support the publishers in light of the undercurrent of the used-book market; poor usage of the textbooks in the classrooms; increasing costs. Even so, my sense is that we are on questionable ground when critiquing textbook publishers for skyrocketing costs or thinking that *all* books should be digital. Having authored textbooks myself, I'm aware of the countless hours that go into producing them. Additionally, I'm aware of the high costs of reproducing prose samples, from poems and stories, to creative nonfiction. Even when publishers avoid the costs associated with print editions and produce ebooks, these ebooks can still be very costly, given copyright expenses. As long as successful authors place a premium on reprint permissions for their works, textbooks that include these copyrighted materials will be justifiably expensive, necessary, and worthwhile. Even when they are expensive, printed textbooks can be exceedingly important for students and instructors, particularly when designed for large courses with multiple sections taught by adjunct faculty. Hence, from my perspective as a faculty member, a textbook author, and as director of a large composition programs in the U.S., I understand that not all books can be free, and I recognize some high-quality texts can be very expensive. I also understand that content creators are partially motivated by a market economy, wanting to receive payment for their investments and creations; I support that effort.

That said, I do think there are instances when faculty may want to consider publishing their pedagogical materials for free, either on their own websites or social pedagogy sites. I think it's time for faculty to consider publishing free, online textbooks and at the very least, it's time for faculty to abandon Blackboard and embrace the capabilities of open-source educational resources. While putting economic motivations aside, faculty may realize benefits from publishing their pedagogical materials online. Having played a leadership role in developing *Writing Commons* <<http://writingcommons.org>>, a free, open-education resource that aspires to be a "home" community for writers, I'm eager to let other faculty know how rewarding it can be to develop and share an open textbook via a domain that they own and operate. Seeing users logged on to your site, as illustrated in figure 1 below, can be a valuable reward. Providing a social space for learners by embedding collaboration tools like wikis, discussion forums, or social bookmarking can be an energizing way to sustain and extend your teaching.

Figure 11 Samples of Visitor Logs, 3/1/2012

Recent [?]	Recent [?]
Thursday, March 01 @ 08:51 : London, GB	Thursday, March 01 @ 10:32 : Philadelphia, Pennsylvania, US
Thursday, March 01 @ 08:51 : Kent, Ohio, US	Thursday, March 01 @ 10:24 : Kuala Lumpur, MY
Thursday, March 01 @ 08:42 : Lakeland, Florida, US	Thursday, March 01 @ 10:22 : Portsmouth, Ohio, US
Thursday, March 01 @ 08:32 : Groningen, NL	Thursday, March 01 @ 10:19 : Newcastle Upon Tyne, GB
Thursday, March 01 @ 07:50 : Tampa, Florida, US	Thursday, March 01 @ 10:01 : Eastleigh, GB
Thursday, March 01 @ 07:46 : Watford, GB	Thursday, March 01 @ 10:00 : Pinellas Park, Florida, US
Thursday, March 01 @ 07:44 : Bergenfield, New Jersey, US	Thursday, March 01 @ 09:54 : Oakland Gardens, New York, US
Thursday, March 01 @ 07:37 : Champaign, Illinois, US	Thursday, March 01 @ 09:33 : Winchester, GB
Thursday, March 01 @ 07:37 : Tampa, Florida, US	Thursday, March 01 @ 09:32 : Tampa, Florida, US
Thursday, March 01 @ 07:05 : Muntinlupa City, PH	Thursday, March 01 @ 09:23 : Mission, Texas, US
Thursday, March 01 @ 07:01 : Mountain View, California, US	

For approximately \$70 year (\$10 for the domain name and \$60 for hosting) faculty can break free of the constraints of Blackboard or Web CT. Many hosting providers, such as GoDaddy!, provide a suite of free, open-source authoring tools, such as Joomla, Word Press, and Drupal. In my experience, these tools are surprisingly powerful and easy to use, and they contain a variety of peer production and social media features. Instead of building a new course in Blackboard every semester—and then needing to do it again and again, semester after semester—faculty can host their ideas and their classes on their server at their domains. This is particularly helpful if you tend to teach the same course each semester. Developing an online textbook for a course you regularly teach can enable you to build a sturdy course that grows over time. Additionally, opening the space to collaborative tools like wikis energizes



your students as it gives them an opportunity to extend their learning, to talk with one another, and to produce relevant texts—texts that other Internet-users may read.

Engaging students in a collaborative effort to build a viable textbook creates energy and focus for courses. Rather than importing the values of a book editor from Boston or New York, faculty can customize their contributions to meet the special needs of their students and colleagues. Consider, for example, Matt Barton’s experience contributing to the Rhetoric and Composition wiki at Wikibooks. Barton began the wiki book as a graduate student at USF and now, five years later, Barton and others use the book in St. Cloud State University’s first-year composition courses. In turn, Lanette Cadle wrote a Basic Writing wikibook with her students in a Theory of Basic Writing graduate course at Missouri State University. Her project was a productive way for the graduate students to apply theory and has become a useful resource for under-served composition students seeking help with writing projects. MC Morgan, a professor at Bemidji State University, shares Barton’s and Cadle’s enthusiasm for engaging students in collaborative, textbook publishing efforts, having worked with students on the “Wiki Writing Handbook” – which he publishes at <http://erhetoric.org>. Morgan cites numerous advantages to weaving the handbook into the rhetorical context of the course and the media of the wiki: “Because the advice is contextualized, it’s more useful than that offered in a traditional handbook. And because the handbook can be updated by those using it, the advice matures, becomes more sophisticated and more connected to practices on the wiki ” (M.C. Morgan, personal communication, June 1, 2010).

Although it is ultimately less daunting than it first appears, I recognize that hosting your own textbook and courseware on your domain may initially seem too technical and time consuming. Fortunately, there are numerous alternative approaches. For example, at Connexions <<http://cnx.org/>> sponsored by Rice University, faculty can publish pedagogical materials in a module format, for free. In turn, the Orange Grove, sponsored by the University of Florida Press and the Florida Distance Learning Consortium, offers an additional alternative. Perhaps the biggest resource out there is Wikibooks, which hosts—at the time I write this—“2,437 books with 40,490 pages.”

When selecting a public space for publishing your work, such as Connexions, Orange Grove, Wikibooks, or Flatworld Knowledge, you should give some thought to copyright considerations. Frankly, I have struggled with the best copyright—or copyleft – for *Writing Commons*. After having worked for at least three years, writing over 325 articles—the equivalent of a 400-page college rhetoric textbook that a traditional publisher would sell for at least \$100—I found it very difficult to give the material away for free; to accept an open Creative Commons license. Indeed, when I talked with copyright experts, many of them recommended I choose a traditional copyright license, one that reserved all rights to my work. Yet when I talked with David Wiley, Cable Green, and other OER leaders, they challenged me to consider my ultimate goal for *Writing Commons*, which is to leverage the miracle of peer production so that I can grow the resource in ways that make it useful for any college student, whether she is taking an introduction to poetry course, a course on public policy, or a course on writing for engineers. “If you want to grow a community around the project,” Charlie Lowe told me, “you’ve got to open it up, to allow for derivatives.” After several years of fretting about the options with colleagues, I settled on [Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License](https://creativecommons.org/licenses/by-nc-sa/3.0/). To that license, I added this addendum: Derivative Works must publish this disclaimer: “This work is a derivative work of *Writing Commons*, a peer-reviewed, open-education resource that is published at <http://writingcommons.org>. As a derivative work, this is a secondary citation that may contain work that is not peer-reviewed.” Now, as we have received our first submissions and are putting those through the peer-review process, I’m happy to see that preliminary indications have suggested that I made the right choice; that other teachers are responding to

our invitations to contribute and that there is a possibility for growing a community around the project.

In summary, then, I think my experience developing *Writing Commons* suggests a viable publishing option for other academics: if you have a good deal of content then you should consider hosting it on your own site. In time, there is no reason why you cannot grow a robust site like *Writing Commons*. If you don't want to commit time and resources to building, maintaining and extending a site, then you have other choices—from nontraditional publishers, like Flatworld Knowledge (who have fairly traditional contracts) to totally free sites like Wikis that provide Creative Commons alternatives. Or *Writing Commons* ...

Of course, if you can develop a financially competitive textbook and sell it through a commercial publisher, then that's an outstanding option: Faculty members deserve good pay for their work, and I have nothing against expensive textbooks that are used well. At 15% on a \$100 textbook, the rewards for textbook authors can be astonishing—especially for textbooks that pertain to large, required courses. We've all known faculty who hit this jackpot and have since been sailing in the Caribbean. Nothing wrong with that – if winning the lottery is what you want.

Despite these outliers, the bottom line is that most textbooks don't make money for their authors. In most disciplines, the ship has sailed on the big book. Until some major shift in a discipline's knowledge base, textbook authors lack the leverage they need to position their book as a viable alternative to the 12<sup>th</sup> or 15<sup>th</sup> edition of the tried-and-true version. Big publishers like Pearson continue to churn out hundreds of books for the same discipline, even though they know the books are unlikely to compete with the traditional leading textbooks. While some critics fault faculty for producing commercial books for their students, I think that criticism may be short-sighted and anti-intellectual. Who else, after all, is in a better position to develop a good book for his or her class than the faculty member who teaches that class?

Yet the problem for most textbook authors is that they sign away their copyright in exchange for 5% to 15% royalties. If the book fails, like so many do, then the author has lost control over his or her intellectual property for pennies on the dollar. Regrettably—and I know this from personal experience—some publishers may refuse to return copyright even after a book fails, which means the work is lost forever. To me, this is a significant danger as we all have only so many words we can write in a career.

As a university professor, I'm well aware of the comforts of the tried-and-true. Even so, it's time for faculty to ask, "Why not?"; "Why not plant a flag?" You can start out small. In the beginning you don't need to commit to writing a massive text. In fact, you probably shouldn't. Try loading a small lesson at a public blog or wiki site, or better yet, begin by joining our community at *Writing Commons*. Together, by embracing peer production, social media, and intellectual freedom, we can extend our teaching, our professional lives, and our academic disciplines for future successes.

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# Capturing Conversations, Context and Curricula: The JLeRN Experiment and the Learning Registry

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## Abstract

According to UNESCO, “[t]he transformative educational potential of OER depends on: 1. Improving the quality of learning materials through peer review processes; 2. Reaping the benefits of contextualisation, personalisation and localisation; [...]”. These have been crucial unfulfilled opportunities for over a decade, and they present significant challenges for the global technical infrastructure in support of open content. With these challenges in mind, the US-based Learning Registry was set up in 2010 to enable capturing and sharing data about how and where teachers and learners use resources and what they think of them, or *paradata*. The project is technical and experimental, with an active international community working on use cases, specifications and pilot implementations. In December 2011 JISC funded the JLeRN Experiment to participate until July 2012, alongside JISC CETIS’s watching brief.

The Learning Registry is a notional technical infrastructure using open specifications and software to support networks for sharing data. The building blocks of the Learning Registry are decentralised nodes, each with data services and policy determined by the host organisation. Nodes allow resources, metadata and paradata to be deposited, manipulated or extracted via data services, and they can share data with other nodes in networks.

The JLeRN Experiment has set up three nodes, and has trialled ingesting and extracting data from several UK sources, notably Jorum. Metadata for Jorum’s ca. 15,000 OERs were ingested via its standard OAI-PMH feed using a utility developed by the Learning Registry. JLeRN then converted Dublin Core subject terms into Learning Registry keys (tags). Jorum is also developing a CakePHP DataSource to extract and share paradata about Jorum resources. From May-July 2012, JLeRN will be supporting a new node at Liverpool University, and four JISC OER Rapid Innovation projects. An interim report with recommendations will be released in May 2012.

## Keywords

Learning Registry, JLeRN Experiment, Mimas, JISC, OER, paradata, metadata, usage data, social media, sharing, curriculum, educational context, innovation, technical infrastructure

## Introduction: JISC, the Learning Registry and the JLeRN Experiment

According to the *UNESCO Guidelines for Open Educational Resources (OERs) in Higher Education* (UNESCO, 2011):

“The transformative educational potential of OER depends on:

1. Improving the quality of learning materials through peer review processes;
2. Reaping the benefits of contextualisation, personalisation and localisation; [...]”

There are seven more points listed, but these first two have been crucial unfulfilled opportunities for over a decade. They present challenges in abundance to those creating the technical infrastructure for global capture, sharing and use of learning resource data.

With these challenges in mind, in 2011 JISC began a watching brief, on behalf of UK Higher and Further Education (HE/FE), on the innovative American project the Learning Registry.

This project began in 2010, and is a joint effort of the U.S. Departments of Education and Defense, with support from the White House and numerous federal agencies, non-profit organizations, international organizations and private companies (Learning Registry, 2011a).

The Learning Registry was set up in response to long-standing requirements established by the educational content community worldwide. Alongside the well-documented issues with simply sharing content and standard metadata, there has been a need to capture, share and use data about how and where teachers and learners use resources and what they think of them. Even where this data has been captured and used within repository or community silos, tracking and recording what happens to open content once it leaves its nest and is used more widely has been something of a dream to date.

The project is primarily technical, highly experimental and still in an early developmental period, with an active international community working on use cases, technical specifications and pilot implementations. Its website describes it thus (Learning Registry, 2011b):

“The Learning Registry is a new approach to **capturing, sharing, and analyzing learning resource data** to broaden the usefulness of digital content to benefit educators and learners. Not a website or repository... not a search engine... and not a replacement for the excellent sources of online learning content that already exist... the Learning Registry is an **open source technical system** designed to facilitate the exchange of data behind the scenes, and an **open community of resource creators, publishers, curators, and consumers** who are collaborating to broadly share resources, as well as information about how those resources are used by educators in diverse learning environments across the Web.”

JISC CETIS, who had had some input into the early development of this project, were given the watching brief, and Pat Lockley (2011), then at the University of Nottingham, took a keen interest and attended the first Learning Registry PlugFest on behalf of JISC. When JISC decided to fund a short experiment investigating the practicalities of setting up a Learning Registry node, Pat had left Nottingham for Oxford University, and Mimas was given the job (Campbell, 2011). Their remit is to work alongside JISC CETIS and a Task Group of interested parties in UK HE/FE, including Jorum, the UK national HE/FE repository for OERs, also based at Mimas. This work became the project known as the ‘JLeRN Experiment: JISC’s Learning Registry Node Experiment at Mimas’, or JLeRN. JLeRN kicked off in December 2011, and is currently planned to continue until July 2012. This paper takes the opportunity of JLeRN’s halfway point to report on what has been achieved to date in the UK, with a look at some further work to come.

### **Overview of Learning Registry Terminology: Nodes, Networks, Communities, Paradata**

The Learning Registry is both a notional technical infrastructure using open specifications and software, and an international community engaged in developing the specifications and software while using them to build *networks* for data sharing (Learning Registry, 2011c).

These *networks* are comprised of decentralised *nodes*; each *node* is set up and maintained with data services, policy and implementation determined by the organization hosting it. *Nodes* can stand alone as points where learning resource data can be deposited, manipulated or extracted via data *services*, or they can be linked to other *nodes* within *networks*, which by definition have shared policies, for wider data sharing. *Networks* can combine to form *network communities*, which can be open (“social”), or closed.

A key concept within the Learning Registry is *paradata*. Originating with the US National Science Digital Library (NSDL Network, 2012), this term is now replacing previous terms such as secondary metadata and usage data to encompass:

“[...] not just quantitative metrics (e.g., how many times a piece of content was accessed), but also pedagogic context, as inferred through the actions of educators and learners. [...] Learning resource paradata is generated through user processes of searching for content, identifying interest for subsequent use, correlating resources to specific learning goals or standards, and integrating content into educational practices. Paradata may include individual or aggregate user interactions such as viewing, downloading, sharing to other users, favoriting, and embedding reusable content into derivative works, as well as contextualizing activities such as aligning content to educational standards, adding tags, and incorporating resources into curriculum. Context about users is also of interest as paradata, including grade level or subject taught, experience level, or geographic location - as is information about the curricular relevance, audience, methodologies, and instructional settings of use as a resource is adopted by practitioners.” (Wikipedia, 2012).

The Learning Registry provides an initial *paradata* model (US Advanced Distributed Learning Initiative, 2011), which is at an early stage of development, and is designed to support experimentation, not to limit implementations with specified requirements. This model describes how *activity streams* may be composed of *contextualize usage paradata*; *aggregate usage paradata*; and *assertions about objects*. Examples of paradata statements (ibid.):

“*Contextualize usage paradata* may include such statements as:

- This resource was viewed during a lesson on volcanoes in a high school geology class.
- This resource was taught by a 5th grade teacher.
- This resource was bookmarked by a high school physics teacher around June 2011.

“*Aggregate usage paradata* may include such statements as:

- This resource was viewed on a detail page 2200 times over the month of May 2011.
- This resource was rated an average of 4.4 out of 5 stars by 2104 users who specialize with English learning students over the month of May 2011 on the learning management system run by NSDL.
- This resource was aligned to Common Core Learning Objective [xyz] by 15 users of the learning management system sold by Agilix.

“*Assertions about objects* may include such statements as:

- This resource is composed of those resources.
- This resource is an assessment of that resource.
- This resource is no longer available.”

Finally, the Learning Registry (2011c) specifies a number of data *services* that *nodes* may support; however, project participants are encouraged to specify their own services if these do not meet their needs. Tools are also being built to work with the *services*. *Nodes* can offer five kinds of service:

- *Publish Services* allow data to be published to a *node* from external sources. *Nodes* can choose which publishing APIs they will support (e.g. SWORD), but they must have to support the *Basic Publish Service*.
- *Access Services* allow data to be pulled, or accessed from a *node*. Again, different APIs (e.g. OAI-PMH) can be, but don't have to be, supported.
- *Distribution Services* allow data to be replicated and transferred between *nodes*.

- **Broker Services** allow *nodes* to “augment, transform or process resource data held at that node to produce new or updated resource data for access or distribution”.
- **Administrative Services**, which “are used to query a node to obtain its status or to trigger node administrative actions.”

### **The JLeRN Experiment: Work So Far**

The JLeRN Experiment (Campbell, 2011) was tasked by JISC to set up a Learning Registry node and work with the UK education community to try it out, and to report frequently and openly on problems, issues, ideas and successes, both outwardly via blogging, tweeting and other dissemination routes, and within the Learning Registry project and community.

In December 2011, JLeRN set up an experimental *Node of Mimas* on an Ubuntu desktop, gathering experience and reporting on bugs and issues (Syrotiuk, 2012c). Once a dedicated server (also Ubuntu) was available at Mimas, the JLeRN *Alpha Node* was set up and disseminated to the community (Syrotiuk, 2012a). Since then, the team has also implemented a *Beta Node* on a Windows server (Gupta, 2012), and are hoping to use Amazon Web Services (as the Learning Registry project does) to set up a *Gamma Node* in the cloud. This last option depends on being able to convince a university finance department that per-use charging is acceptable; a key issue in the UK.

### **Data for JLeRN: Jorum and the JLeRN Task Group**

The proximity of Jorum to the JLeRN team, and the fact that usage data is a key concern for Jorum, made them the perfect source of initial learning resource data to start testing the services on the JLeRN *Alpha Node*.

Jorum provides a standard OAI-PMH feed of all its resources’ metadata. Nick Syrotiuk (2011b) of the JLeRN team implemented an OAI-PMH ingest utility developed by the Learning Registry, which published metadata records for all of Jorum’s 15,000 OERs to the *Alpha Node*. He then extracted subject terms from the OAI-PMH feed and inserted them into the node database as Learning Registry *keys* (or tags), allowing metadata records to be pulled down from the node by subject.

The next point of interest for Jorum is thinking about gathering and sharing paradata. Jorum developer Steven Cook is currently working on a CakePHP DataSource to support extraction of usage statistics OERs in Jorum; this DataSource will be usable by others (Currier, 2012b).

### **The UK Learning Registry Task Group**

Before JLeRN kicked off, there was interest in the UK from a few universities in the Learning Registry. Jenny Gray (2012) at the Open University had done some initial exploration, as had the universities of Nottingham and Liverpool. To capitalize on this interest as quickly as possible, JISC CETIS and JLeRN hosted a Learning Registry Hackday in Manchester on January 23, 2012 (Currier, 2012a). This event allowed Pat Lockley (2012), who maintains his interest in the Learning Registry since leaving Nottingham and has developed various useful Learning Registry tools, and the JLeRN developers to support other institutions with both setting up nodes and sharing data. The Hackday also discussed potential use cases, and four bids for the JISC OER Rapid Innovation Programme were consolidated, three of which ended up being successful (JISC, 2012).

This event was followed in February 2012 by a half-day session at the annual CETIS Conference, with discussion and several presentations on ideas and work to date (Currier, 2012b). There was a chasm apparent between what is currently possible with the Learning Registry as a technical proof-of-concept project, and what the OER community would like to do. The session finished by gathering a community wish-list for what they would like to see happen next. Participants wanted:

- Simple software libraries for a range of languages to interact with the Learning Registry.
- An OAI Explorer to “allow you to poke at a node to see what’s there”.



- The ability to get learning resources out by a simple search, for instance, out of an activity stream to see what's trending.
- "Would like to see my institution release data for the Learning Registry".
- Developer how-tos.
- How to deal with backdated paradata; e.g. when you have a website that's been used for years - all that usage data - do I submit individual records for every single event? Don't want to crush the node by submitting 50,000 uses.
- Hide the hard stuff.
- Can we get some good stuff from Google Scholar?
- Continued dialogue around accessibility use cases.
- How can we really make use of Google to get to Learning Registry content?

## Next Steps

With four funded months left, the JLeRN project is currently working on an interim report to JISC, which will include an assessment of the appetite and capacity for this work within the UK FHE/FE sector, and recommendations for further work. In the meantime, there are a number of projects for JLeRN to support within the OER Rapid Innovation strand of the JISC / HEA OER3 Programme, which kicked off on 26 March 2012 (JISC, 2012). These constitute a range of use cases exemplifying the appetite that exists within the sector. Notably:

- **Rapid Innovation Dynamic Learning Maps-Learning Registry (RIDLR).** Based at Newcastle University, this project will develop "open APIs to harvest and release paradata on OER from end-users (bookmarks, tags, comments, ratings and reviews etc.) from the Learning Registry and other sources for specific topics, within the context of curriculum and personal maps." (Cotterill, 2012).
- **Sharing Paradata Across Widget Stores (SPAWS).** Based at Bolton University, this project will use the Learning Registry infrastructure to share paradata in the form of user views, reviews and ratings about educational widgets across four existing widget stores. (Wilson, 2012).
- **Xerte Experience Now Improved: Targeting HTML5 (XENITH).** Based at Nottingham University, this project builds on the Xerte Online Toolkits, which integrates directly with the Xpert Repository. As an adjunct to its main development work, it will explore sharing metadata and paradata about Xerte resources with the Learning Registry (Tenney, 2012).
- **Track OER: Tracking Open Educational Resources.** Based at the Open University, this project aims to "develop software that can help track open educational resources" as they are used away from their point of origin (McAndrew, 2012). JLeRN has already entered discussions with them to ensure mutual affordances are identified.

In addition to these projects, the University of Liverpool will soon be working with the JLeRN team to set up their own node. As well as assisting with meeting Liverpool's requirements, this will enable JLeRN to experiment with sharing data between nodes at different locations. Work with Jorum will continue, and discussions have begun with the JISC Resource Discovery Programme to widen the reach of the Learning Registry concept. Once the JLeRN interim report to JISC is complete, the JLeRN blog will give updates on where to next for the experiment.

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# **Card Tricks and Cartoons: How to converse about OER with people who know nothing about it**

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## **Abstract**

How do we bridge the gap between the promise of OER and the practice of OER, moving from engaging the enthusiastic few to informing the suspicious majority? How can educational technologists talk to other educators about OER and get them to understand the potential, while allowing them to talk through their concerns? This session will show how OER were used to develop open resources aimed at sparking discussion and promoting understanding of OER reuse. Aimed at educators and educational managers who have no prior knowledge of OER, the 36 cards use plain language to cover technical, quality and motivational issues identified through a longitudinal multi-case study of reuse facilitation in practice. Other resources reflect outcomes from a retreat involving 33 HE practitioners and experts from 18 institutions, including six UK national teaching fellows.

The ORIOLE Project (Open Resources: Influence on Learners and Educators) has brought together a special interest group of practitioners and researchers within UK higher education to share ideas on reuse of Open Resources. Card tricks and takeaways will be included!

The project is part of OLnet (<http://olnet.org>) activity and an outcome of Chris Pegler's National Teaching Fellowship project.

Cards available at <http://www.slideshare.net/orioleproject/chris-pegler-reusable-card-game>

## **Keywords**

OER, open educational resources, reuse, sharing, OLnet, ORIOLE, staff development, cards, cartoons, open practice

As more open educational resources (OER) become available educational practitioners beyond current activists are asked to consider open resource use, or sharing, as a change to their established practice. What would motivate them to make these changes? How can they be introduced to the issues and opportunities of OER so that they understand the promise of this activity within the context of their own practice? Despite progress in attracting support from policy makers, an equal enthusiasm and commitment to openness by mainstream educators is required to sustain momentum. It is all too easy to lose this audience through emphasis only on the high level agenda, the long term, or concentration on examples which require a high level of technical skill. Teaching staff have increasing pressures on their time, so engaging with new practices needs to make sense and offer benefits for themselves and/or their students. In introducing OER we need to address questions which are relevant to newcomers to OER, for whom reuse and sharing of online resources may not be common practice. Their questions should ideally be addressed through examples drawing on their course, discipline or institutional expertise. However, as a relatively new area of practice where the circumstances surrounding use and sharing OER in normal teaching practice are little understood there are few examples from practice to draw on.

ORIOLE (Open Resources: Influence on Learners and Educators) is a project based on sharing understanding of the impact of open resources on practice. It circulated a survey in 2011, which attracted over 190 respondents and which will help inform understanding of practitioner concerns about OER use and sharing. The project also hosted a retreat for 30 UK and Irish based OER practitioners and researchers from institutions exploring and generating

ideas on how to address practitioner concerns and support their engagement. This demonstration looks at two resources created for that retreat, with one of these (the card set) used subsequently by OER researchers Anna Comas-Quinn, Teresa Connolly, Bea de los Arcos, Alannah Fitzgerald to facilitate discussion at events and conferences in the UK and Italy. Further resources, notably a scenario planning activity devised for the retreat are also being prepared as OER, to use when raising development and exploring concerns about open resources. Each of these aids is designed for off-line use, to allow even technologically nervous teaching colleagues to engage with the discussion. The set of cards, based on research into facilitation of reuse in UK HE, but appropriate to a wider range of contexts is described below. Figure 1 offers three examples from the set, while Figure 2 illustrates one of the cartoons used to trigger discussion about sharing resources and appropriate timing for this activity. These and other resources are available to download at the ‘shop’ as OER at the ORIOLE project blog <http://orioleproject.blogspot.com>.

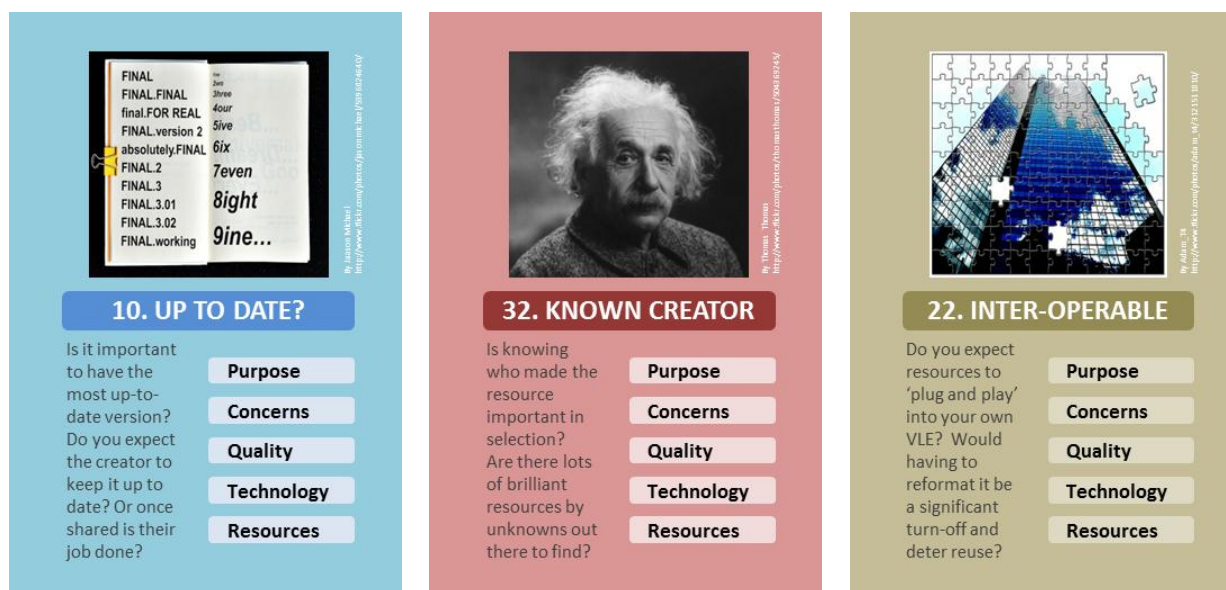
### **Cards and cartoons, examples and use**

The 36 reuse cards draw on doctoral research into a spectrum of resource reuse initiatives (Pegler, 2012a) based on five UK cases studies. Desk research, involvement with reuse projects, 23 recorded interviews and 2 data capture suite observations, identified 222 factors influencing facilitation of resource reuse. These user beliefs and concerns could be classified into three largely independent categories, representing Technical (technology and licenses), Quality and Motivation factors (Pegler, 2012b). Each category related to experiences or assumptions about sharing and use of resources and each suggested different approaches to resolving these. Although only some of the initiatives studied were engaged in OER activity these categories and the many factors within them appear generalizable to that style of sharing and use. Within the cards (see Figure 1) these three category themes are represented by different colours.

Each card has been illustrated using an image, with a creative commons license permitting derivatives, sourced from Flickr. This has been a significant talking point when showing the cards to people who are unfamiliar with open licenses and have not previously considered searching in this way. The images are attractive and relevant, showing that reusable open resources can be of appropriate quality and provide interesting source material. The format used was one modeled on a popular children’s card game which could fit within the space offered by business card printing services (Moo.com was used). Rather than providing factual information and statistics for each card, as is the format for the children’s game, this pack suggests questions and offers headings that can be used to decide rankings, or prompt questions with the users providing the answers.

Figure 1. Examples of cards from Chris's reusable card game

Source: ORIOLE Project ([http://orioleproject.blogspot.co.uk/p/shop\\_16.html](http://orioleproject.blogspot.co.uk/p/shop_16.html))



Motivation card example

Quality card example

Technical card example

While the pack of cards were devised primarily as a staff development tool, to start discussion, they have been used more extensively both formally and informally. The card set can also become a route to obtaining information about motivation, quality and technical assumptions and requirements within different contexts to assist in research around OER.

For example, small groups have been asked to agree the three most critical questions about OER to which they required answers, or on which they needed assurance, drawing on the titles and trigger questions within the cards. This can be done with a full set (36) if the session is lengthy, but is more usually done with a sub-set of the cards (i.e. Technical, Quality or Motivation) sorted by separate groups within the same session. They can record their choices informally providing these as verbal feedback in discussion and in comparison with other groups. Alternatively their preferences can be recorded more formally, noting answers, additional questions and comments on large formatted worksheets onto which the cards are placed in the preferred order. Alternatively users can be asked to provide further information on the climate for OER use within their context, using the cards as triggers to expose examples relating to purpose, concerns, quality, technology and resources issues.

Using the cards in this way exposes researchers to the complexity of decision making and contextual variation so that concerns can be recorded and addressed. Although the 36 cards are not intended to represent a comprehensive set of factors, they represent popular factors within the 'long list' and offer sufficiently broad coverage to encourage debate while recognizing that practitioners are expected to have questions about a new process before adoption. Should participants decide not to adopt or explore reuse after using this resource there will be some record of their reasoning to help inform understanding of motivation around shifts to more open practices.

Figure 2. Sharing the fruits of your labour

Source: ORIOLE Project ([http://orioleproject.blogspot.co.uk/p/shop\\_16.html](http://orioleproject.blogspot.co.uk/p/shop_16.html))

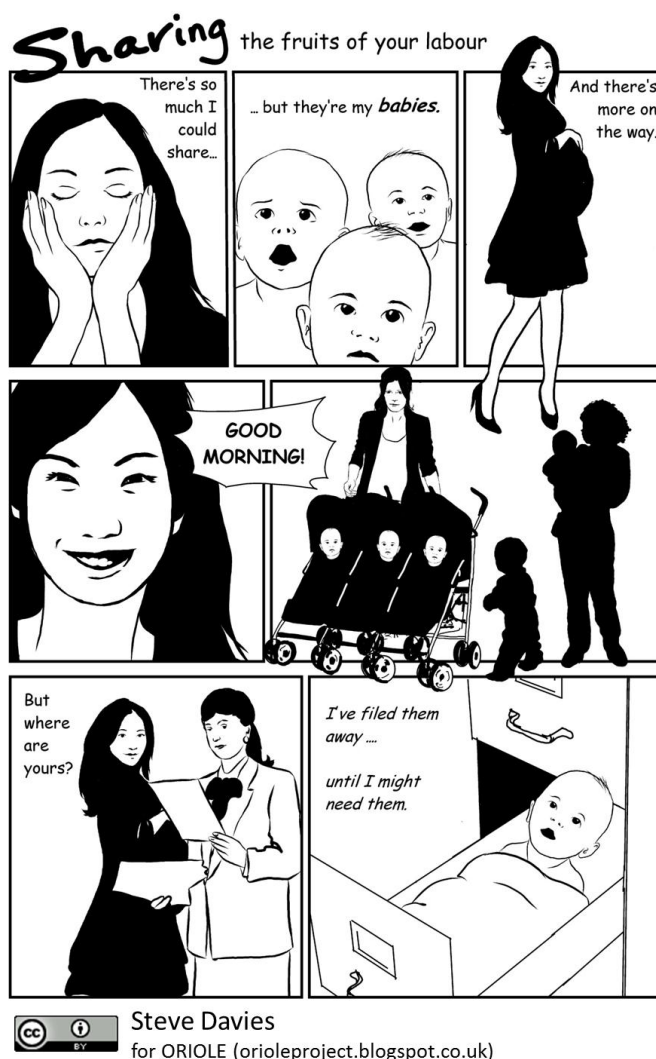


Figure 2 shows an example of a cartoon developed to trigger discussion of when resources might be shared. This is of particular interest in exploring concerns about trust and control. It addresses assumptions that resources may not be ready to share at this stage. Concerns about tweaking the quality of resources *already in use with learners within the institution* before agreeing to share these as OER have previously been identified (Beggan, 2010). Within the ORIOLE survey questions were asked about the activity undertaken before creators of the resource would be prepared to share. A simple analysis of that data suggests that practitioners often expect to improve their resources when sharing these with others. Examples of activity which they expected to undertake included: checking grammar; checking accuracy and currency; adding references and acknowledgements; improving appearance; making resources available in other file formats; re-sizing so that it can be used as a stand-alone; removing contextual information (e.g. dates); and checking for third party rights. From 61% - 89% of respondents expected to need to do some of this extra work. This cartoon can be used to discuss whether this work is necessary, the extent to which it creates a barrier to engaging with OER, and the extent to which those using OER value access to work which is not of fine finish or fully developed, what Weller (2010) described as the 'little OER'.

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## **Community College Consortium for Open Educational Resources: An Expanding Role in the Open Education Movement**

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### **Abstract**

Stating their intention to share curriculum freely online, faculty leaders at the Massachusetts Institute of Technology (MIT) started the modern open education movement a decade ago. They acted on the conviction that “open dissemination of knowledge and information can open new doors to the powerful benefits of education for humanity around the world (Marguiles, 2004).” Other 4-year colleges and universities would soon recognize the benefit of this revolutionary move to make educational resources openly and freely available on the Internet to educators and self-learners alike. The Open Courseware Consortium (OCW Consortium) was established in 2004 to represent this global multi-institutional effort to share knowledge.

The Community College Consortium for Open Educational Resources (CCCOER) was founded in 2007 by then Chancellor of the Foothill-DeAnza Community College District, Dr. Martha Kanter, now Undersecretary of the U.S. Department of Education, to give community colleges a voice in the growing open educational movement (CCCOER, 2011). Growing the membership to over 200 colleges in four years, CCCOER then merged with the Open OCW Consortium in the summer of 2011 signaling a maturity of the community college open education movement and recognition by the OCW Consortium that community colleges have a significant role to play in the global open education movement (OCW Consortium Partners, 2011). Through outreach and support of faculty and staff in identifying, creating and/or repurposing high quality open educational resources and open textbooks, CCCOER continues its mission within the OCW Consortium of creating awareness of open educational resources to improve teaching and learning while making education more affordable.

### **Introduction**

The modern concept of community colleges in the United States emerged with the need to retrain WWII veterans returning to a post-war economy (Ricketts, 2009). The Servicemen’s Readjustment Act more commonly known as the “GI Bill” provided stipends for veterans’ education without regard to race, religion, or economic limitations. The unprecedented demand that resulted from this funding spurred the 1947 Presidential Commission on higher education to focus on junior colleges, art and science institutes, and community colleges to provide these opportunities. Thus was popularized the term “community college” which became the defining model as junior colleges were upgraded to the new standard and many new community colleges were founded. The number of community colleges grew in the 1950s with returning Korean War veterans and doubled in the 1960s reaching 847 nationwide (Geller, 2001). The current count exceeds 1100.

These new community colleges were founded to provide open access to high-quality, affordable academic programs including achievement of associate degrees and certificates. Committed to excellence in teaching and learning, they focus on preparing students for transfer to 4-year colleges and universities, career development in high-demand occupations, and developmental coursework for underprepared students.

The introduction of high-quality open educational resources into community college curricula aligns with the open access mission by lowering economic barriers for students. These openly licensed resources can also enhance the teaching and learning in the classroom by providing a wider variety of digital materials to support diverse learners. An open license allows



instructors to customize educational resources to accommodate the special needs of their students and campus culture.

### **Workforce Preparation**

Community colleges have a special focus on workforce preparation and often partner with industry and regional workforce boards to provide job training, retraining, and skill improvements for local and global jobs. Many federally funded projects and government departments share open educational resources online, which may be used by anyone with access to the Internet. For example, the U.S. Department of Energy (Department of Energy, 2012) hosts a website featuring OER, live chats, and job boards that can be used by individuals, educators, or job seekers who want to learn more about energy systems and job opportunities.

In 2011, the U.S. Department of Labor in conjunction with the Department of Education issued the Trade Adjustment Assistance for Community College Career and Training (TAACCCT 2011) Grant Program. This call for proposals to fund training programs for displaced workers differed significantly from previous ones in that all new curriculum produced by the grant recipients is required to be openly licensed. By requiring these new educational resources to be openly licensed, the public at large is guaranteed access to them. Through open policies such as this, greater access and affordability to education can be achieved. Thirty-four community college consortia have been awarded grants totaling 500 million as of fall 2011.

### **Developmental Programs**

Community colleges have the unique role in higher education of accepting all post-secondary students to prepare them for college and to enter the workforce. A significant percentage of students entering community colleges require remedial coursework prior to taking college-level courses and half of these students (Mellow, 2009) are unsuccessful and will dropout. Open educational practices can improve these outcomes by allowing instructional materials to be freely modified to support diverse learner needs. These modifications can include language translations and vocation-based contextual learning as needed by different student populations.

The Bridge-to-Success project lead by Anne Arundel Community College and funded through a Next Generation Learning grant is one such example of a project using OER to address the needs of developmental students (Lascu, 2011). Through collaboration between Anne Arundel, Open University UK, MIT, and the University of Maryland University College, open courses that provide the skills necessary for becoming a successful learner at the college level can be offered by community college partners or made available directly to interested students. These courses emphasize “learning how to learn” and performing real world math problems that students are likely to encounter in their own lives.

### **Transfer Programs**

The third role of community colleges in the higher education system is to provide the lower division curriculum necessary for students to matriculate at a 4-year college or university in order to achieve a bachelor’s degree. Nearly half (46%) of all undergraduate students in the U.S. earning a bachelor’s degree attend community college before transferring to a four-year institution (Mellow, 2009). Student who choose to attend community colleges to fulfill their first two years of college are motivated by many reasons but open access and affordability are primary. The use of high-quality open educational resources can significantly reduce the cost of college attendance thus making community college even more accessible to this student population.

Many examples of OER and open textbooks exist for use in the lower division courses. The College Open Textbooks collaborative maintains an online catalog of 750+ college-level open textbooks of which nearly 150 have been peer reviewed for quality and appropriateness for community college students (College Open Textbooks, 2011). Washington state has developed the Open Course Library which is collection of the highest-enrolled 81 community college courses available freely online to instructors and students (Open Course Library, 2011). Their open license allows instructors anywhere to copy the materials and modify them for use in their own classrooms.

### **Summary**

In summary, community colleges are participating in the identification, creation, and repurposing of existing open educational resources in ever growing numbers to help their students achieve their academic and career goals. There are significant OER grant funded projects at the individual community college, regional and national consortia level who are making a difference in students lives by lowering barriers to high quality education.

Open licensing of education materials permits their impact to be felt beyond the initial student population it was developed for. Developmental coursework at most community colleges is focused on basic reading and composition and math skills. The creation and sharing of outstanding openly licensed curriculum and assessments to meet this need creates new economies of scale for higher education institutions, their students, and learners worldwide. Translations into multiple languages can extend the impact of these materials even further.

Community colleges with their mission of open access and their focus on developmental and vocational preparation have the potential to improve the lives of those who lack the necessary academic preparation and financial means to attend four-year colleges and universities. The adoption of high-quality open educational resources can further the mission by lowering barriers for these students and increase their chances for achieving the education and skills necessary for successful lives.

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# **Design, Development and Evaluation of Collaboratively Developed Open Educational Resources for the Post-Primary Classroom**

Ann E Marcus-Quinn

## **Introduction**

Despite the attempts to integrate ICT across the curriculum of all post-primary education systems in the developed world there remains low levels of use (McGarr, 2009). One of the major reasons for this low level of use is the availability of curriculum relevant software. In recent years the availability of high quality authoring tools has provided opportunities for the low-cost development of highly reusable curricular relevant materials. The increasing use of educational repositories can now facilitate the wide-scale distribution of these resources. This has the potential to radically reconceptualise use of ICT across the curriculum in Irish schools, particularly in the Humanities area, an area that has not traditionally incorporated ICT (Ertmer, 1999; Ringstaff and Kelley, 2002; Baek, Jung and Kim, 2008).

## **The Study**

The research aimed to develop curricular specific courseware for the teaching of poetry at Junior Certificate level in Irish post-primary schools. It aimed to capture the collaborative design and development process used in the development of the courseware and describe and evaluate the implementation of the resource by teachers in different educational contexts.

The research employed a case study approach as it was seen as the most suitable methodological approach to capture the richness of the design and implementation of the resource. The resource was developed in collaboration with six practicing teachers and implemented in three different schools in very different classroom settings. Through the use of semi-structured teachers interviews, student questionnaires and classroom observations the research methodology employed aimed to capture the richness of the experience from the participants' perspective.

In conducting this research study, one of the primary aims was to understand how learning objects could be used to engage students and enhance their learning experience. This research intends to examine how students could use technology to critically engage with an online resource and construct a personal learning experience which could then be applied to other areas of their daily lives where they are required to engage with online resources. This study will also explore how one RLO could be used across multiple settings. In order to do this a study was planned which would follow the fundamental components of case study research. This study drew on both quantitative and qualitative data collection methods such as observations, online surveys, and focus group interviews, online discussion fora and LMS event logs.

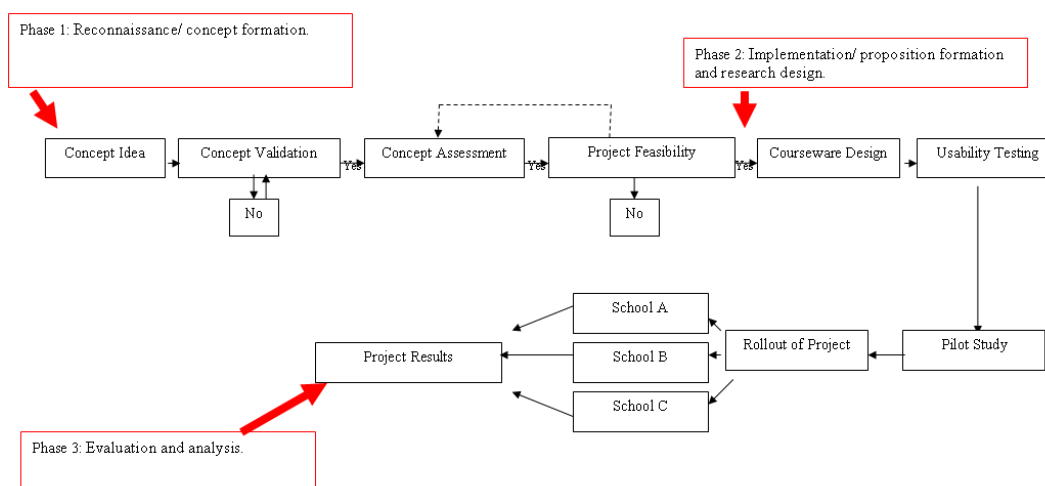


Fig 1: Visual representation of the study

The research found that despite the low levels of ICT use in schools the participating teachers were enthusiastic users of the resource. While it was evident that the students had limited experience of using ICT in schools they nonetheless enjoyed the experience and appeared to benefit from use of the resource. The research also found that the resource was highly reusable and was interpreted and used by teachers in different ways to best suit their needs and the needs of their students.

As with all learning resources educational software has a multitude of uses in the classroom context. At a very basic level any educational resource can enhance the role of the teacher whereas on the opposite end of this spectrum educational resources can have a much more significant and fundamental change to the teaching /learning environment (Laurillard, 2009; Boyle 2003) . On completion of the learning resource it was envisaged that the RLO developed in this study could be used in two quite different ways:

1. As primarily a teacher resource sued to enhance the role of the teacher as the imparter of knowledge. In this context, the teacher, using a projector, may direct learners through the resource and the activities on screen.
2. The second type of use is where the students would use the resource completely autonomously with little/no direction from the teacher.

## Results

Having completed the case studies for this research a second dimension emerged. While software can be used to enhance the role of the teacher or liberate the learner to become more independent, autonomous and self-directed there is a second intersecting dimension which involves whether the software is used as it is intended and designed or whether the teacher subverts and adapts elements of the resource to suit their educational needs. What is important in this aspect is that these needs may be teacher centred or student centred. The diagram below highlights these intersecting dimensions and is a very useful visual representation of the various possible uses of the resource developed for this study.

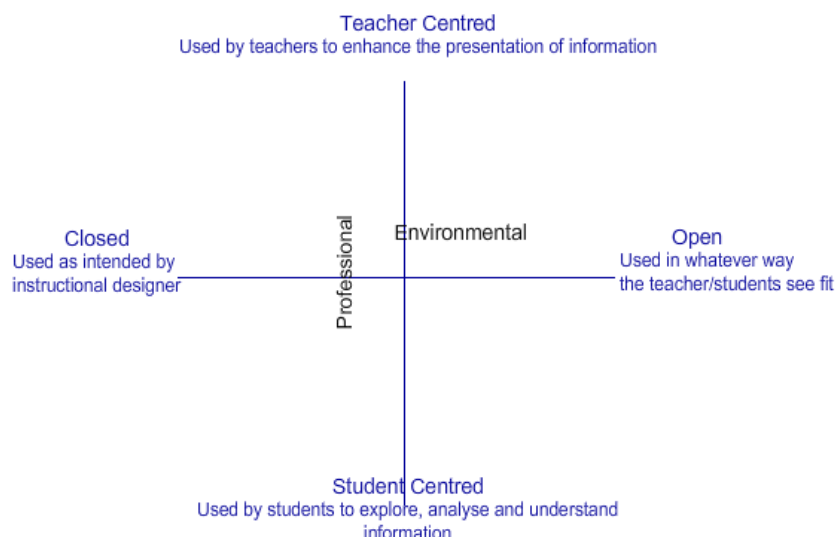


Fig 2 Visual representation of the nature of use of learning objects in the classroom

The type of use may be categorised into quadrants: open, closed, teacher-centred and student-centred. It is interesting that these very different types of use are all catered for by one learning resource. If anything is to demonstrate the crucial role of the teacher to the classroom it is this. How the object is used rests primarily with the choice of teaching strategy that the individual teacher engages in. It is not, as some mistakenly believe, the software that determines the pedagogical use in the classroom.

#### **Upper right quadrant: teacher centred and open.**

The upper right quadrant describes a use that is teacher-centred, open flexible use – but what is meant by this and how could one describe the nature of use in this quadrant? The teacher will direct how the resource will be used. The teacher may decide to use individual aspects of the RLO with class and may not use others. Therefore a teacher may decide to draw students' attention to the audio material or a photograph of the poet but they may decide not to use other elements such as any the activity material available. In this scenario students have little or no level of opportunity for autonomous use. The student progresses through each of the screens in the manner and pace that the teacher dictates.

#### **Upper left quadrant: teacher centred and closed.**

The upper left quadrant describes a type of use that is quite mechanical. This type of use is teacher-centred but closed rigid use. In this scenario the power is again primarily with teacher and the student is more passive. The teacher will direct how the resource will be used. However, this type of use tends to be quite linear in nature. The teacher will go through all of the on screen elements before progressing to the next screen. Students have no opportunity for autonomous use. The teacher may nominate students to read aloud from the screen. The teacher dictates the pace at which students progress through each of the screens. The students may write the answers to the questions in their copybooks. Annacotty College experienced this type of use. As the class was a weaker support group they needed the teacher to take more of a role in their use of the resource. Where students encountered new vocabulary or where some element needed further explanation the class were able to ask the teacher without drawing negative attention to themselves. This type of use tends to occur in a classroom where the focus is more didactic Callan (1997) and Mackey (1998).

### **Lower right quadrant: open and student centred**

The lower right quadrant describes a use that is both student-centred and open. This type of use is quite flexible and is for creative users. This type of use occurred at St. Mary's where the students used the RLO for the TL21 project. In this instance the students were able to adapt elements from the resource for their own project work. In this type of use the teacher may assign a task but students are allowed to carry it out at their own pace. The teacher may not provide any direction for how the resource will be used. The student progresses through each of the screens autonomously. The students may write the answers to the questions in their copybooks or they may chat among themselves to discuss the possible answers. This scenario sees students engaging in self-directed learning where the power lies primarily with the student. In this environment the students seemed to greatly enjoy personalising their learning experience.

### **Lower left quadrant closed and student centred**

The lower left quadrant describes a use that is student-centred but closed. The teacher will direct how the resource will be used. This type of use may be described as off the shelf learning. Students have a lot of opportunity for autonomous use. The pace at which students progress through each of the screens can be negotiated so that it is either student led or teacher led. Cedar Hill used the learning resource in this manner. While they had homework tasks assigned to their use of the resource how they used the resource was completely at their own discretion. These students also had the additional facility of the VLE. Their learning experience was very positive and their teacher also reported that he was confident that learning had taken place in a very positive manner. There are many advocates of this type of autonomous learning in the existing literature. Many have identified the benefits of such an environment eg Kupetz and Ziegenmeyer (2006) as discussed in the literature review.

### **Conclusion**

There is a body of work to be found in the literature endorsing each of these types of uses. Each type of use certainly has merit and it is up to individual teachers to decide which type of use works best for them. One of the most important things to note from the experience of this study is that ICT can be made as flexible or as fixed as an individual teacher is comfortable with. This echoes Cuban's theory where technology may be seen as an amplifier for the existing classroom activities (Cuban, 2001).

The lower right quadrant where the type of use is both student-centred and open is arguable the most ideal learning environment for the student. Control of the learning process is handed over to students. What are the contributing factors that will promote this type of use being adopted over other types of use? Arguably, the most influential factors on type of use are environmental and professional. If we see environmental factors as lying along the horizontal axis and professional factors lying on the vertical axis then it is possible to identify what the barriers to the most ideal type of use are and what measures can be put in place to address them. The SETT framework (Zabala, 1995) considers four elements when considering the use of assistive technology with students: Student, Environment Tasks and Tools. As the classroom grows more diverse and students may not be streamed until later in the school years this framework should not be limited to the area of assistive technology but can be seen in any classroom environment which adapts technology.

How a teacher rates their own techno-pedagogical competence determines how the resource will be used. This is their competence to use technology for pedagogical reasons, competence to integrate technology in teaching

Although outside of the scope of this paper the findings of this research suggest that the framework used in the collaborative development of the resource has enhanced the reusable

nature of the object and that future resources should employ a similar collaborative approach. The research also suggests that the reusability of the resource is dependent of the curricular and pedagogical coherence of the learning object. The research raises a number of issues for the development of such tailor-made solutions and highlights opportunities for future developers.

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# **Economics of Open Courseware**

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Paper not submitted

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# **Embodied Democratic Knowledge: Enabling an Affinity Driven Information Economy**

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## **Abstract**

*Writing Commons*, <writingcommons.org>, is an original digital OER textbook designed to provide a free creative learning environment for writers, as well as an interactive space for writing instructors to learn about, interact with, and collaborate in the writing process. *Writing Commons* is designed to utilize the collective intelligence of a purpose orientated community to develop a new kind of writing textbook, a textbook not written by a traditional author but rather by a collective of writers, with common goals and uncommon knowledge that can be more interactive, democratic, and enriching than traditional texts allow. *Writing Commons* is founded on the belief that individuals will want to collaborate together in order to continually create emergent knowledge. By enabling a networked information economy (Benkler, 2006) where users are able freely access decentralized peer-reviewed information that has been compiled from a wide spectrum of relevant perspectives, *Writing Commons* is a tool which enacts a democratic and progressive vision of what education resources can do in the digital age.

## **Keywords**

affinity space, information, democratic, open-source, writing, tools, emergent knowledge, networks.

The increasing availability of and access to, networked Information Communication Technologies represents a dramatic opportunity to create dynamic spaces and tools that enable global citizens to interact with and participate in the fields of knowledge they demand. *Writing Commons* represents the project of designing such and affective space that empowers writers of all levels, backgrounds, and purposes to access and understand the process of successful writing. The concepts of information economies (Benkler, 2006), emergent knowledge (Kelly, 2003), and affinity spaces (Jenkins, 2006) lay at the core of why *Writing Commons* was developed, and what it attempts to facilitate as a digital Open Education Resource.

Yochai Benkler (2006) describes his concept of a “network information economy” as the “decentral[ization] [of] individual action - specifically, new and important cooperative and coordinate action carried out through radically distributed, nonmarket mechanisms that do not depend on proprietary strategies” (p.3). Conceptually, network information economies represent an antithesis to traditional industrial economies of rival capital goods. Within networked information economies, nonrival capital goods - information - are openly, easily, and freely exchanged without degrading the relative use value (Benkler, 2000, p.36). The exchange of nonrival information means that individuals, with nothing more than the ability to connect, are able to participate in an environment that is relatively free from traditional hierarchies of control and exclusion - *free* to participate in a cooperative and constructive way. Characteristically a network information economy empowers individuals by: improving their autonomous capabilities, enhancing their ability to produce collaboratively with others free of traditional structures of capital, and improving their capacity of operation within formal organizations (Benkler, 2006). As Benkler (2006) notes, not only is “autonomy at the core of all the ... improvements”, but the concept of autonomy being advanced through networked information economies is “a practical lived experience, rather than the formal ... philosophical concept” (p.9).

With a focus of providing nonrival information and fostering individual autonomy *Writing Commons* has been built to actively participate in the emerging networked information economy of Web 2.0. By operating under a “Creative Commons Attribution-NonCommercial-Share-Alike 3.0 Unported License” and providing peer-reviewed content to users’ free-of-charge, *Writing Commons* embodies the shift away from traditional capital market hierarchies towards an open agora where the exchange of information and knowledge, not monies, represents the guiding ethos. The promise of open access network information economies is that, by reducing the relative cost of access, a larger and more diverse spectrum of users will begin to participate. As the diversity of the participating community grows, so too will “the diversity of perspectives on the way the world is and the way it could be for any individual is qualitatively increased” (Benkler 2006 p.9). Although providing a free, relatively simple, writing resource to the global public may seem a relatively minor achievement, the act of producing and providing an alternative resource of knowledge represents a critical step towards realizing the globally networked information economy. Over the past month, *Writing Commons* has welcomed visitors from every continent on the planet, including users from Australia, Denmark, and Zambia (fig 1).



fig. 1, ClustrMap of *Writing Commons* visitors ("Clustrmaps," 2012)

By providing vetted, peer-reviewed, content to the global public free of charge, *Writing Commons* embodies the spirit of democratically redistributing knowledge, and the tools of creating knowledge. The more users *Writing Commons* can connect, and enable through free peer-reviewed knowledge, the more real and powerful the information network economy it supports becomes (Latour, 1991). With well over 1,000 unique I.P. addresses visiting *Writing Commons* per month, it is well on its way to actualizing the change it represents. Because of the implicit connection between technology and human actions, and interactions, *Writing Commons* has been developed as a tool that utilizes a the networked information economy to translate technological advantages into individual opportunities.

By enabling an enormous diverse and otherwise unrelated, collection of individuals to interact within a mutually beneficial space *Writing Commons* creates the opportunity for the production of new, “emergent knowledge”. Like bee-hives, or ant colonies, emergent knowledge develops like a hive-mind when many individuals operate as a unique collective (Kelly 2006). Together, collectives can often work more efficiently and effectively than any one individual alone could. In *Out of Control* Kevin Kelly (2003) recalls how a group of anonymous conference attendees, presumably unfamiliar with each other on the individual level, came together to successfully fly, navigate, and land a simulated aircraft (?). As a collective, the high-flying conference strangers were able to do something that no-one of them could have done individually. Emergent knowledge allows individuals, as a collective, to actualize knowledge they may not otherwise have access too, or use of. *Writing Commons*, as a participatory tool for networked information economy, provides the ideal space for the

convergence of individuals into productive collectives because only networks can establish the sort of highly fluid, yet organized, connections necessary to nurture emergent knowledge (Kelly 2003).

The network that *Writing Commons* fosters represents the ideal emergent knowledge environment. By featuring content which covers all aspects of the writing process, *Writing Commons* exemplifies Kelly's (2003) ideal emergence network which is "nearly synonymous with democracy or the market" (?). Unlike more traditional writing resources which, because of the limits of the bound page, tend to cover bits and pieces of the sea-of-knowledge about writing and composition, *Writing Commons* remains unbound to any specific topic and is able to address any need of any writer. Also unlike traditional writing textbooks, which once bound cannot be unbound, *Writing Commons* can - at the request of its participants - constantly introduce new material, and new knowledge. *Writing Commons* also enables direct on-site user interaction and knowledge emergence through in-chapter blog commentary features, social media connectivity, and print on demand capability; allowing community members, and random users alike, to literally craft their own textual experience. While community, or crowd, driven knowledge is often criticized as unreliable and decidedly un-expert, *Writing Commons* recognizes that as a globalized-Postmodern community we can no longer rely on individual perspectives and knowledge as definitive, and that we should instead embrace "network-formation and development of knowledge ecologies" (Seimens 2006 p.23).

No matter how democratic the *Writing Commons* networked information economy may be, and regardless of the collective power of the emergent knowledge that could be created, without interested, enthusiastic, and active members, all the collaboration driven ethos (Bacon, p.8) in the world would be for not. As Quentin Viregge and Kyle Stedman, Taylor Mitchell, and Joe Moxley explore in *Agency in the Age of Peer Production* (In Press), getting individuals to participate in a collaborative project is a difficult, if not near impossible, task to accomplish - particularly in traditional education settings. Affinity spaces, designed to encourage interaction and collaboration through play, enjoyment, or even jouissance, represent a promising alternative to traditional methods of encouragement or persuasion (McCarthy & Nahas, 2011). Unlike traditional learning environments that tend to be static, formal, and institutionally regulated, affinity spaces typically grow within popular culture and are experimental in nature (Jenkins, 2006). Whether they are physical or virtual, affinity spaces "are sustained by common endeavors that bridge differences in age, class, race, gender, and educational level, and because people can participate in various ways according to their skills and interests" (Jenkins, 2006, p.9). Because common interest provides the connection between otherwise unrelated individuals within affinity spaces, involvement tends to be highly fluid and participation tends to fluctuate based on levels of interest or entertainment, making maintaining an effective space (McCarthy & Nahas, 2011).

*Writing Commons* is able to mitigate the problem of fluctuating interest interest by centering the community focus of writing; a practice defined enough to avoid distracting generalizations but flexible enough to meet an impressive variety of needs. Whether users come or go, are perpetually or are only occasionally active, the content of *Writing Commons* remains equally useful to the writer. Additionally, the same blog-based interactive features that help encourage emergent knowledge, contribute to the jouissance of the *Writing Commons* experience by allowing users to interact with each other, to pose their own questions, even to act as an expert in their own right as they respond to the questions and comments of others. Perhaps the most powerful affinity tool of *Writing Commons* is embodied in the multiple ways through which users can read, and experience, the text. Not only is *Writing Commons* designed as a digital-text which can be read as a traditional e-book, one sequential page after another, but it is also programed - through hyper-text links - to be read according to the user's personal preferences

and needs. Because of presence as a digital platform, *Writing Commons* is also able to utilize embedded and linked videos and images that appeal to those users who are not impressed by traditional texts. These none traditional features facilitate a user interaction that can be readily altered to suit the user's tastes and preference, making the use of *Writing Commons* a wholly more enjoyable experience; a true affinity space.

*Writing Commons'* commitment to enabling, and enacting, a unique and progressive emergent knowledge community, founded as an affinity space which supports a networked information economy seems like a daunting challenge. Regardless of the inherent difficulties in creating and maintaining such a complex and dynamic learning ecology, tools and spaces like *Writing Commons* represent the very best that digital ITCs can offer a wanting, and needing, globally connected public. Free from the restraints of hierarchies and restraints of traditional economies and power structures, Open Education Resources like *Writing Commons* may not provide simple solutions to problems of an increasingly globalized and connected world, hungry for answers, but they can provide the free and democratic spaces where answers might be found or formed.

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# **Enabling Students to Evaluate and Make Effective use of Contemporary Open Education Resources**

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## **Abstract**

The literature on student and general learner experiences of OER is sparse. Students require skills and understanding of how to search for OER and also how to assess provenance and quality of resources. The aim of the current research is to develop a student skills package for OER use.

Our approach is to run student focus groups to extend an existing critiquing tool called the “Information Source Evaluation Matrix” currently recommended by the university library. Initial focus groups have been conducted to provide feedback on the suitability of the matrix and to make recommendations so it can be adapted to evaluate not just text-based resources such as books and journals, but OER that exist in multiple formats from video, to animation to audio files. We have also conducted a survey on student attitudes and perceptions toward OER activities and cultures.

The present paper summarises our interim findings of focus groups and questionnaires regarding the student view of the matrix and learner experiences of OER more generally. The matrix is appearing to be a flexible tool, and the initial survey results show that although students are not largely aware of the term OER or existence of resources, they are fully supportive of the concept of universities sharing materials, and work with a culture of support and sharing of information with their fellow students.

## **Keywords**

Open educational resources; learner experiences; student experiences

## **Introduction**

Open Education Resources (OER) are digitised materials which can be reused for teaching, learning and research, that are made available through open licensing (Hylén 2007). In the UK the HEA and JISC are running the Open Education Resources programme which began its pilot initiative in April 2009 (HEA 2009).

Many OERs are aimed at and developed for academic users; however students are potential users also. Currently the literature on student and general learner use of OER is sparse. One study concluded that a major problem with OERs was that students were either not aware of the existence of OER, or they did not possess the correct skills to find and use them (Stapleton et al 2011). In this study, 65% of students did not use OER, but of those who did, 67% just found them by browsing the web. Most popular reason for use was to enhance understanding of a topic.

In a comprehensive review of learner use of OER by Bacsich et al, the authors recommended the need for further research on the student experiences of using OER for learning, and research into how to support students in gaining an understanding of how to assess provenance and quality of resources (Bacsich et al 2011).



As part of our UKOER Phase 3 project “Health and Life Sciences Open Educational Resources” (HALSOER), our aim is to involve students in the evolution of a skills package for seeking and using OER. Currently, the university library supports students with workshops and focus guides on how to search for and critique text-based literature. Students use an “Information Source Evaluation Matrix” (Leigh et al 2009), which assists students in assessing and evaluation the quality of literature (Towlson et al 2009). It is our intention that through on-going research, the matrix will be adapted for the appraisal of OER which are abundantly available in a range of formats, from video to animation to audio files.

The present paper summarises our interim findings of focus groups and questionnaires regarding the student view of the matrix and learner experiences of OER more generally.

## **Methods**

### **Student focus groups**

A series of student focus groups were conducted with 38 participants who were of mixed undergraduate and post graduate level students from the Faculty of Health and Life Sciences Faculty at De Montfort University, studying Biomedical Science, Medical Science and Forensic Science. The group first applied the matrix to a text document to familiarise themselves with the format and the approach (a news page from the BBC Health website). Students then applied the matrix to a multimedia OER (from the Virtual Analytical Laboratory VAL website; <http://www.tinyurl.com/oerval> ). Students suggested any necessary amendments to the current format of the matrix to enable a more effective evaluation of the resources, and students were permitted to write on the matrix with comments and suggestions.

The matrix consists of a number of questions ranging from the accessibility of the resource to author background, to relevance of the source to the subject matter. Each student scores each section between 1 and 5 and obtains a total at the end. There are five sections titled, “who”, “what”, “how”, “where” and “why”, and as long as the total score reached a given threshold, the resource is deemed of high academic quality.

### **Student questionnaire**

Student perceptions and attitudes toward OER and the concept of sharing learning resources was also evaluated. A questionnaire comprising of Likert-scale questions and open questions was distributed in paper copy to Biomedical Science students, and an on-line version is also available on SurveyMonkey for wider distribution.

## **Results**

A total of 38 students were involved in the focus groups to develop the matrix. 33 provided annotations and comments on how to improve the matrix, and 5 completed the task without making any suggested amendments or comments. It was confirmed by these students that the matrix is sufficient in its current form for the effective evaluation of OERs.

No indication was given of the need for amendments to the current format and criteria of the matrix, although immediately its application to evaluating a multimedia educational resource was questioned:

*“...and this evaluating matrix can easily be used when evaluating the writing article or essay. But when we are looking animation it is difficult to find info that will be needed to make sure it reliable.”*

The use of the word task in the “What” criterion was deemed to be confusing and students felt that:

*“The matrix is more for journal/article based evaluation as these videos show no particular argument”.*

Students commented that many OERs did not contain vital information such as author details and date of publication that were required to make a judgement about the quality of the resource.

### **Student attitudes and perceptions to OER and sharing**

Respondents to the questionnaire were on average 20 years of age and included 18 male and 34 female students studying Biomedical Science (n=40), Medical Science (n=11) and Forensic Science (n=1). The participants were of mixed ethnicities but predominantly White British or Asian Indian/Asian British Indian.

In a section evaluating the understanding of the term OER, 80% of respondents had never heard of the term “Open Education Resource”, however 42% thought that they felt they understood what the term meant.

Students were provided with a list of websites and repositories and were asked to identify which were associated with OER. 52% correctly identified the Virtual Analytical Laboratory (VAL) as an OER, 42% identified YouTube EDU whereas only 20% thought JORUM.co.uk was an open resource. When asked about the notion of “open”, 84% thought that OERs were free under open licensing in the economic sense and 90% in the liberty sense.

The majority of the participants agreed with statements suggesting DMU should share resources for free with other students and academics from other universities and the public. Lecturers should use resources developed by other institutions in their lectures and students in their learning. As students most agreed that they would feel happy using OER developed by other institutions.

Student deeper perceptions of OERs and the notion of sharing were explored, and not all the results are reported here. Students were advocates of sharing resources already with each other, using Facebook, email and by sharing hard copies. Their motivations for sharing included:

*“Other people are entitled to see it. Others should/would do the same”*

and

*“To help them, to share ideas and for some help”.*

### **Conclusions**

This paper reports on interim research looking at learner experiences of OER. Student focus groups have been conducted to adapt an existing library matrix for critiquing information to become an evaluation tool for OER which come in a range of file formats. The matrix was felt to be a useful evaluation tool for OERs but student feedback suggested it requires some fine tuning and clearer instruction for its use and application.

There is a need to make clear the breadth of resources the matrix can be applied to i.e. video, animation and other forms of OER resource. The participants felt that the matrix needs to move away from the clearly defined hierarchy of newspapers, trade magazines, books and academic journals expressed in the “Why” criteria. The matrix, in its current form, focuses on the evaluation of the reliability, authority, applicability, currency and purpose of the information, and to adapt it for OER use it should include some judgement on the resources



usability i.e. the pace of narration, use of language, downloadability, HD resolution, media quality and option for subtitles.

The questionnaire shows that there is a low level of awareness of the existence of OER, as observed in another university (Stapleton et al 2011) and this perhaps is not surprising. Our research has highlighted that a clear sharing culture exists within the student population, leading to the advancement of self and of others in a united purpose for higher quality work. There was buy-in of the concept of universities sharing resources for their mutual benefit.

In conclusion, academic establishments should develop their students' research skills pertaining to OER, including their ability to scrutinise sources for quality. OER authors should develop strategies to make OERs more widely available and student friendly, particularly containing all the relevant information in order for a student to judge the quality and currency of the resource. The use of logo marks would be a useful tool in helping students identify resources and grade each in terms of quality. A full account of this research into learner use of OER will be published as part of the HALSOER final report, part of the UKOER3 programme.

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# Engaging Employers, Professional Bodies and Open Educational Resources

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## Abstract

Open educational resources (OER) have the capacity to deliver quality learning materials to meet the challenges presented by the current higher education landscape. In the UK, open education is allowing individuals to tailor their learning experience to their requirements, be they undergraduates or staff undergoing continual professional development.

To ensure the OER are fit-for-purpose, high-quality, and maintain currency, especially in rapidly developing professional areas, engaging partners outside of the education sector is a necessity. How best to engage with these partners is one aspect that is being investigated by the HALS (Health and Life Science) OER project at De Montfort University, part of the UKOER Phase 3 programme.

For HALS we have identified a number of potential partners for OER development outside the classical education sector, including both commercial and public sector organisations, and professional bodies. As part of HALS we are exploring the benefits and barriers of establishing these partnerships, and the level of contribution desired and provided.

Our results to date show that the level and type of engagement of partner organisations varies considerably and depends on variety of factors such as organisational attitude, perceived need and benefits to the partner, infrastructure support and crucially the nature of the contact and the willingness of individuals to engage and deliver. The work is on-going to evaluate more fully the nature of these partnerships and the benefits to educators and learners involved.

## Keywords

Open educational resources; External partners;

## Introduction

National public sector changes raise the need for organisations to work more closely (BIS 2011, DOH 2010). Also, with the publishing of the Brown Report (Brown 2010), employability skills and understanding for graduates have been placed high on the agenda, with many employment-related initiatives starting up in universities. As part of the HALS project, one of our aims is to explore these national needs by establishing partnerships with a range of external organisations.

At De Montfort, our Phase 2 UKOER Project “SCOOTER” (Sickle Cell Open – Online Topics and Educational Resources) forged informal relationships with external partners, including the Sickle Cell Society and clinical biochemists within the NHS (Rolfe 2011). In this project we recognised the valuable contribution that partners could bring in terms of providing high quality assets and case-studies representing real-life scenarios. In HALS, part of UKOER Phase 3, our aim is to explore these relationships more systematically for the mutual benefit of all involved.

In this paper we present some interim findings of the benefits and barriers to these working relationships.

## External partners

The external partners identified for HALS were both existing collaborators (e.g. Leicestershire Constabulary), organisations where there were links with one or two individuals (e.g. NHS), or entirely new collaborators (e.g. Oxford University Press). They were chosen to represent a range of end users and professional bodies relevant to our health and life science programmes including Biomedical Science, Medical Science and Forensic Science. Table 1 summaries the partners involved in the HALS project.

Table 1. External Partner Involvement in OER.

External Partner	Participation	Approval Decision
Leicestershire Constabulary	Producers, end-users	Organisational
National Health Service	Producers, end-users	Individual / teams
Oxford University Press	End-users	Organisational
Forensic Focus	Producers	Organisational
The Fingerprint Society	Quality control	Organisational

## Level of participation

Public sector participation generally includes the provision of assets to be developed into OER including histology photographs, laboratory data, career planning, and professional and technical advice. These organisations are also end-users of the OER; the materials developed for our science undergraduates is also relevant to their own junior staff professional development, e.g. histology resources for final year Biomedical Science students is relevant for biomedical scientists in the NHS requiring Health Professions Council registration, and junior histopathologists seeking registration with the Royal College of Pathologists. The participation of the local Constabulary and the Fingerprint Society ensure the forensic science resources are of high quality and meet professional body requirements, and are specifically tailored to deliver the required competencies.

## Approval for decisions

All discussions with external collaborators regarding the concept of open education have been entirely positively received. Staff at all levels are all supportive of the concept and even discussions that were anticipated to be more difficult for example agreeing copyright and licensing terms, the partners have always been happy to go with the level of Creative Commons license required by the project (BY SA).

The discussions are driven by a shared goal of both parties contributing to learning materials that will then be of mutual benefit. In addition, national strategy changes have validated and given approval to this dialogue. University strategy has changed and tasked institutions with putting the undergraduate experience at the heart of educational practices including emphasis on employability (BIS 2011), and similarly public sector organisations such as the NHS have been challenged to work more closely with education institutions to support professional development needs of staff (DOH 2010).

The level of decision making ranged from organisational i.e. board approval, senior management sign off, senior management approval of time and commitment, through to an individual basis where individuals or small teams were happy to collaborate. In these instances, licensing permissions to release materials using Creative Commons were gained at a departmental leadership level.

## Motivations for involvement

As part of this project, further research will be conducted to understand partner motivations and perceived barriers, but the initial ideas in Table 2 are based on the discussions already held.

Table 2. External Partner Motivation for Involvement

External Partner	Business Model
Leicestershire Constabulary	Graduate employability
National Health Service	Graduate employability / staff continual professional development (CPD)
Oxford University Press	Business development / quality supplementary information
Forensic Focus	Business development
The Fingerprint Society	Maintaining quality of professional materials

In our experience to date, the motivations for, and outcomes from these discussions are not just about OER. Particularly with the NHS, discussions about OER has catalyzed wider collaborations in terms of research opportunities, and has led to new opportunities for final year science dissertation students and post-graduate opportunities for university students. Similar experiences have come to light with the forensic science professionals which have also yielded unexpected opportunities that have outweighed the pre-conceived objectives of the project.

In conclusion, the paradox is that the external partners are buying into the concept of sharing mutually beneficial resources, whereas in the university the benefits of such collaboration are often not as quickly recognized, and the justification and persuasion of colleagues is often a more detailed process. We conclude, that working with external partners for the production of OER is mutually beneficial, not just in terms of enhancing student educational experiences but by catalyzing dialogue around a whole range of collaborative opportunities.

### Acknowledgements

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# Expanding the Ecosystem for Remixable OER

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## Abstract

The keys to OER remixability are modularity, pluggability (semantic formats), sharability, and reliability. Repositories that support semantic formats, however, are hard to grow and maintain, because they need specialized tools for creating and editing content in those formats. When projects and repositories try to “go it alone” and build integrated, all-in-one solutions, they inevitably struggle with high cost, and poor usability. In this paper we show how a new approach using open APIs can overcome the barriers to supporting semantic formats. An API, OERPub, adapted from SWORD and AtomPub, provides a common way to publish OER to repositories. This relatively easy-to-support feature makes it possible to build common tools that let authors create content using whatever familiar tools they have (Google Docs, Word, Open Office, LaTeX, etc), but still publish OER in remixable formats (semantic XML formats like DocBook, CNMXL, and DITA). Repositories can then concentrate on being great places to find, combine, and adapt content, and other ecosystem players can deliver and improve the OER globally and ubiquitously in print, mobile, and online venues.

## Keywords

OER, remixable, API, SWORD, OERPub, AtomPub

## Benefits of and Requirements for Remixable OER

In order to reuse and adapt open education resources efficiently, the resources must be remixable; that is they must be conducive to mixing with other content, to adaptation to local contexts, and to delivery by a wide variety of means. If the content is remixable, then once it is created, the content unleashes many potential multiplier benefits that can be provided by the original author, the original publishing location, or, most-importantly, by the community. For example communities can translate, edit, or enrich the material. The community (individuals, organizations, or businesses) can also add value by providing services and delivering the content in innovative ways.

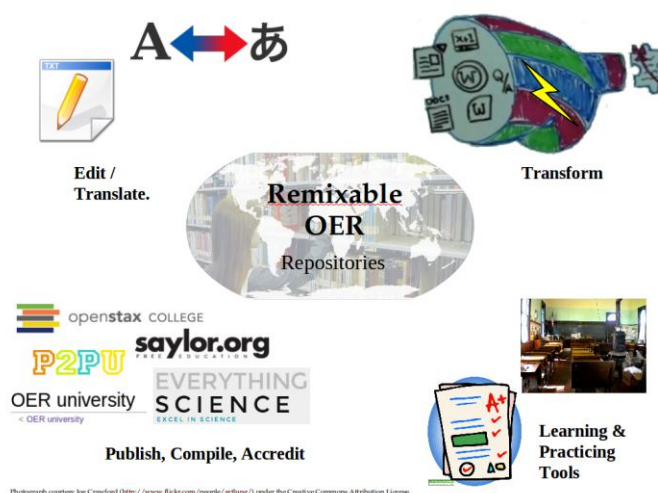


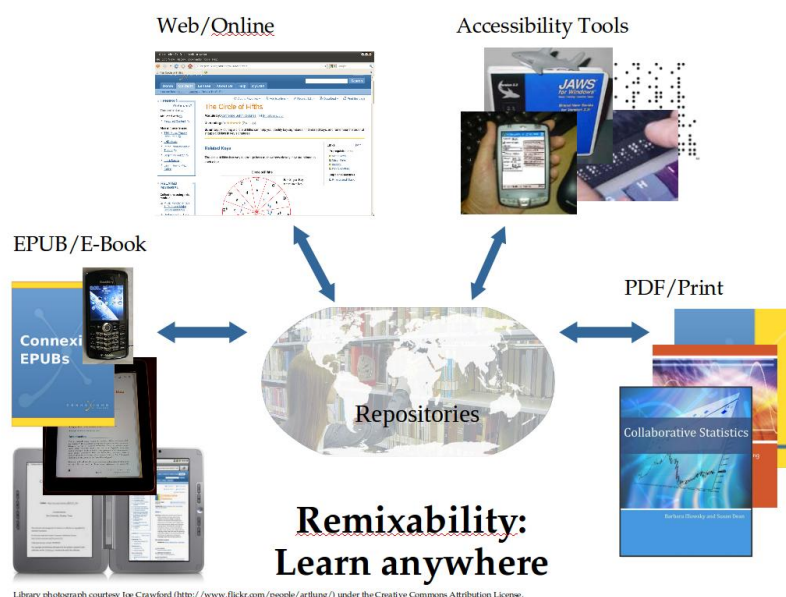
Illustration 1: Ways of reusing and adding value to OER.

In order to be remixable, content must have certain properties that make it easier to remix and adapt. Content needs to be **modular** so that reusing it as a part of other works is easy to do, must be **pluggable** so that it is coherent and consistent when included in larger works, must be

**shareable** so that the community can safely adapt and reuse it, and lastly, it is extremely helpful if the content is **reliably available** so that it is easy to find, reuse, and cite. Three of these four features are relatively straight-forward to achieve. Modularity is achieved by ensuring that small chunks of learning content are discoverable and reusable; for example, keeping videos short, providing single lessons and chapters, creating banks of images and questions. Creative Commons provides a legal framework for declaring how works can be shared and reused. And publicly available, permanent repositories provide durable, permanent URL's or Digital Object Identifiers (DOI's) for OER. But providing pluggability turns out to be harder.

### Pluggability: Open, Semantic Formats

To make documents easily pluggable, they must be editable, and more importantly the format they are in must be easy to reconfigure and re-style when included in a larger work. Their format must be **open** and **semantic**. Open formats make it possible to build tools and services that edit, adapt, and transform the content. Keeping the formats semantic means describing **what something is** (a heading), rather than **what it looks like** (bold, 20pt), and these semantic elements can then be styled uniformly and can be analyzed and transformed to create tables of contents, indices, lists of figures, linkable interactive practice problems, etc. Semantic format also makes it easy to produce different versions specialized for print, online, mobile devices, or screen readers.



### Why Supporting Pluggable Document Formats is Hard

The major barrier to supporting pluggable formats is authoring them. All of the major editors that people use (Word, Libre Office, Google Docs, etc) have many features that are based on manually providing styling, and they have few provisions for providing semantic information about elements in documents. And yet they are extremely easy to use. Structured document editors provide needed features for creating remixable documents, but require technical expertise to use. Therefore, almost all of the major OER repositories support general purpose, but very hard to remix, document formats (.doc, .pdf, etc.)

Repositories like Connexions that do support semantic, remixable formats, then typically try and provide home grown tools for authoring and remixing content, and homegrown tools for importing content from less semantic formats. Doing so is expensive and has mixed success with ease-of-use.



## Making it Easier to Support Pluggable Document Formats

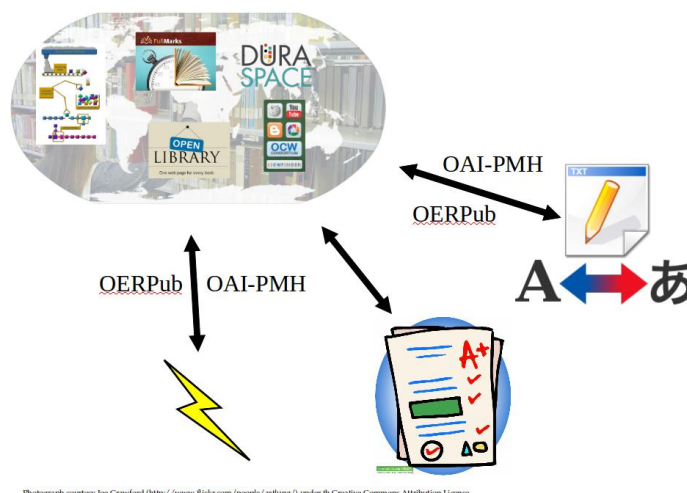
To make supporting remixable content feasible, two problems must be solved. First, we must expand the number of developers working on tools for remixable OER. Secondly, we must make authoring remixable formats much easier than it is today, and luckily this second task becomes easier if the pool of potential developers is expanded.

### Step 1: Expanding the Number of Developers Working on Supporting Remixable Formats

OER repositories must provide pathways that allow the community to build tools and services to create, edit, adapt, and remix OER and then publish the OER to public repositories, rather than requiring the use of tools and services built and maintained by the repositories themselves. In technical terms, these pathways are called application programming interfaces (API's). The API's must cover both getting content out of repositories (discovery and retrieval), and getting content into repositories (publication). API's for discovery include both metadata for describing OER well and mechanisms for getting to the metadata and then retrieving the OER.

**Description, Discovery, and Retrieval of OER:** API's (and more importantly communities that are stewarding the development and maintenance of them) are well established. Describing OER is covered by Dublin Core metadata, LOM metadata, the Learning Resource Metadata Initiative, and Schema.org. Retrieval of OER from repositories is well handled by OAI-PMH for retrieving metadata and web retrievable links to the described resources.

### API's Expand the Ecosystem



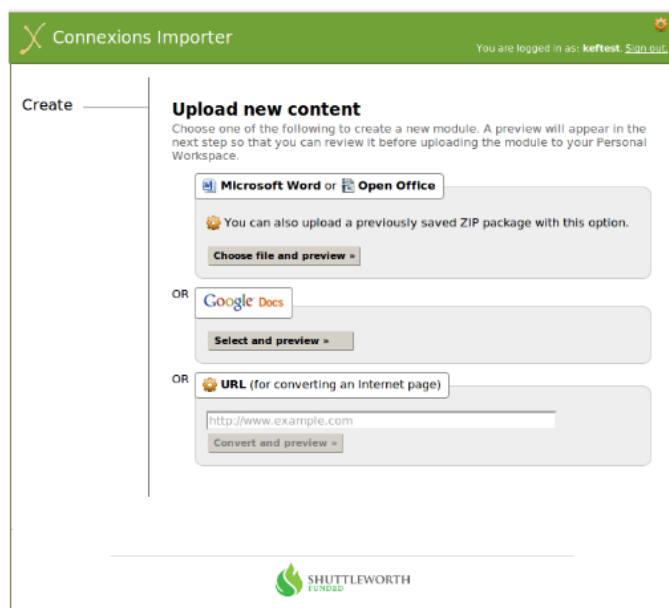
Photograph courtesy Joe Crawford (<http://www.flickr.com/people/azhang/>) under the Creative Commons Attribution License.

**Publishing OER to Repositories:** The OER community has not yet embraced a common API for publishing OER and OCW to repositories. The general-purpose repository community, however, has been developing common ways to publish. They developed an API called SWORD (Simple Webservice Offering Repository Deposit) for publishing packages of materials to repositories ([swordapp.org](http://swordapp.org)). It is based on an even more basic and widely used API called AtomPub that is used to publish blog entries and has a flexible mechanism for extension. For example, the Google Docs API is based on AtomPub.

**OERPub API:** As part of the author's Shuttleworth Fellowship, SWORD was adapted to publish into OER repositories. The OERPub SWORD adaptation adds recommended educational metadata (which hopefully the community will continue to refine as new metadata initiatives like LRMI gain acceptance), explicit mechanisms for creating new versions and creating adaptations (derived copies) to support remix, and workflow and error

handling for repository specific publication and licensing requirements. The API specification can be found here – [code.google.com/p/oer-roadmap/wiki/OERPubAPI](https://code.google.com/p/oer-roadmap/wiki/OERPubAPI).

Because OERPub defines a clear and simple mechanism for publishing OER packages and their metadata, it makes it possible to build tools and services to create, edit and adapt OER and then publish and share the OER in open or curated repositories. One such open repository, Connexions (cnx.org), has implemented an OERPub service, and a diverse group of developers supported through the author's Shuttleworth Fellowship have created a web-hosted tool for importing common document formats (office, Google Docs, HTML) into the semantic format that Connexions supports.



example of the ecosystem expansion: Client importer using the OERPub API to publish to the Connexions repository.

## Step 2: Making Authoring of Remixable Formats Easier

It is critical to support authors creating, editing, and adapting OER documents in semantic formats. The added development resources and expanded ecosystem that flourish because of API's will make it possible to explore several different approaches at once. Since teachers and learners author in Word, Google Docs, and web editors, part of the solution must be transforming these formats into remixable formats. That approach was used in the importer shown above. Once OER is in semantic formats, authors must be able to edit and adapt. Simple WYSIWYG and WYSIWYM editors that require no expertise (but still support expert options) are needed.

Several approaches to structured authoring look promising. One approach would map semantic formats into HTML5 so that authoring tools built for the web can be repurposed and specialized for remixable OER. These mappings must be non-lossy; all of the desired semantic information must be present in the HTML5 mapping. And necessarily, tools must be adapted to restrict some features in HTML5. We are planning to create an editor for semantic formats that initially targets the Connexions semantic XML format and that uses the publishing API to share and remix content. Our goal is to make the editing experience as close to the model that authors expect from their experience with word processing software. Peter Flynn's research on *"The usability of software for authoring and editing structured documents"* provides a model where authors essentially operate as they would creating a Word document, and the software detects points at which to ask for clarification of the



intended meaning of particular style choices. This approach preserves common authoring patterns while keeping documents well-structured.

### **Initial Results: A Growing Ecosystem for Remixable OER**

The goal of the OERPub API is to make supporting remixable formats easier for the wider OCW and OER community. Because Connexions implemented the OERPub service, we illustrate the effects on the Connexions-related developer community. OERPub has made it possible to expand the community of developers building tools that support creating and publishing content in Connexions semantic format (CNXML). The importer shown above is one such new tool. Siyavula, publishers of open textbooks in South Africa, has extended the semantic format that Connexions uses to support features needed for their curriculum-aligned math and science textbooks. Both Siyavula and Kings College London developed customized print generation. An OERPub Transform Toolkit is being created so others can adapt these tools for transforming into and out of semantic format (from Word, Libre Office, Google Docs, and HTML to PDF, HTML, and EPUB). The Vietnam Foundation has created a federated set of repositories all using the CNXML semantic format. The author's fellowship is supporting engaging with specific OER content generating communities that are ready to publish in Connexions under a CC-BY license. These projects will make use of the publishing API and specialized tools to make sharing their content in a remixable format more efficient. These content partners include [MITE](#), [Saylor.org](#), [Siyavula](#), the [Open Course Library](#), the [Jesuit Virtual Learning Academy](#), and others.

### **Getting Involved**

The goal of these new APIs and the expansion of the developer community around remixable OER is to create an open architecture for remixable OER that is based on discrete components that communicate through open APIs. To get involved with any of the projects mentioned, please email the author and join the oerpub-dev mailing list (oerpub-dev@googlegroups.com).

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# **Global Platform for Open Education**

Nitin Kumar, SyMynd, US

Paper not submitted

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# **Institutional Collaborations of OpenCourseware in the Cloud Era -- Experience of TOCWC**

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## **Abstract**

Taiwan OpenCourseWare Consortium (TOCWC) was established in 2008. By the end of 2011, there are more than 27 members. All of them are higher-education institutes. Also, we have more than 400 courses, and 75% of them have video courseware. During the past few years, we have 2 major institutional-collaborating projects running. One is the metadata engineering. Another is the analytics aggregator for understanding the usage of our OpenCourseWare (OCW).

Since 2009, we have built a metadata model for Taiwan OCW content by incorporating with member universities. Moreover, we have also built an indexing system based on this metadata model in order to search OCW content efficiently. The metadata model contains 8 categories and 47 fields. We plan to collect metadata from more than 135 courses in 2012. We wish this system could improve the discoverability of OCW content.

We have noticed that a huge proportion of visitors went deeply into institutional sites through the Consortium site. We would like to gather more usage information by using cloud-based web-analytics tools. Instead of asking members to report monthly data, we have built a cloud reporting aggregator to collect and share measurable web-analytics data automatically. This project is launched in November, 2011. There are 9 member universities join this project now. We plan to do a statistical analysis after we get enough data. We think it might give us some hint on what strategy we could use to promote the movement of OCW.

## **Keywords**

OpenCourseWare, collaboration, cloud computing, metadata, web analytics

## **Introduction**

Taiwan has population of 23 million. For each year, there are about 200K infants born. However, there are nearly 180 universities or colleges in Taiwan. Higher education is common and not expensive here. It provides an excellent environment to develop open education resource, especially for Chinese content. National Chiao Tung University (NCTU) had foreseen the trend and established the first OCW site in Taiwan in 2007. In order to promote the OCW movement in Taiwan, TOCWC was established in Dec. 2008, where there was only 10 universities joined in. The TOCWC had 27 members joined in the year of 2011, majorly top national universities. Also in 2011, TOCWC became one of the sustaining members of OCWC. For the past few years, TOCWC members have contributed more than 400 OCW courses. Mostly significant is that more than a half of them have videos. For the purpose of increasing utilization of these content, begin in 2009, the TOCWC launched the project of building standardized metadata model for OCW. It is the first collaboration project in between TOCWC members. In 2011, TOCWC launched another new project to standardize the utilization reports of OCW content. One of the TOCWC members, Taipei Medical University (TMU), is appointed to build an automatic reporting aggregator based on cloud technology. This paper will demonstrate some details about these 2 projects.

## Building Standardized Metadata Model for OCW

In 2009, we began to think how to let people find proper OCW content. The Taiwan e-Learning and Digital Archives Program (TELDAP), a national project, had a sub-project called “Development of Systems and Standards for Digital Archives.” The core team who is responsible for the implementation of metadata is called “Metadata Architecture and Application Team (MAAT). Under the cooperation of MAAT and TOCWC, we had design a standardized metadata model for OCW, which is based on IEEE Learning Object Metadata (LOM) and SCORM 2004.

In the initial phase, we had signed agreements with member universities. We had called for participation for sample-filling metadata after the first draft of metadata model released in Jan. 2010. There were 8 members volunteered. The model had more than 70 fields. Participated members suggested a shorter model would be more feasible. In July 2010, the MAAT had released the final version of the metadata model for OCW. It has 47 fields in 8 categories, as shown in Fig. 1. Compare to the LOM, the TOCWC metadata model has less fields and less categories.

Fig. 1. LOM versus TWLOM and TOCWC metadata model.  
Source: MAAT. (2010).

LOM 元素名稱	TWLOM	TOCWC	4.3Location	4.3 位置	4.3 位置
1.General	1.一般	1.一般	4.4Requirement	4.4 需求	4.4 需求
1.1Identifier	1.1.1catalog	1.1.1 識別符	4.4.1OrComposi	4.4.1 或組成	4.4.1 或組成
1.2Title	1.2.1Entry	1.2.1 項目	4.4.1.1Type	4.4.1.1 型式	4.4.1.1 型式
1.3Language	1.3 標題	1.3 標題	4.4.1.2Name	4.4.1.2 名稱	4.4.1.2 名稱
1.4Description	1.3 語言	1.3 語言	4.4.1.3Minimum	4.4.1.3 最低版本	4.4.1.3 最低版本
1.5Keyword	1.4 描述	1.4 描述	4.4.1.4Maximum	4.4.1.4 最高版本	4.4.1.4 最高版本
1.6Coverage	1.5 關鍵字	1.5 關鍵字			
1.7Structure	1.6 涵蓋範圍	1.6 涵蓋範圍			
1.8Aggregation	1.7 結構				
	1.8 聚合層次				
2. Life Cycle	2. 生命週期	2. 生命週期	4.5Installation	4.5 安裝說明	4.5 安裝說明
2.1Version	2.1 版本	2.1 版本	4.6OtherPlatform	4.6 其他平台	4.6 其他平台
2.2Status	2.2 狀態	2.2 狀態	4.7Duration	4.7 期間	
2.3Contribute	2.3 貢獻	2.3 貢獻	5.1Interactivity	5.1 互動型式	5.1 互動型式
2.3.1Role	2.3.1 角色	2.3.1 角色	5.2LearningResource	5.2 學習資源型式	5.2 學習資源型式
2.3.2Entity	2.3.2 實體	2.3.2 實體	5.3InteractivityLevel	5.3 互動程度	
2.3.3Date	2.3.3 日期	2.3.3 日期	5.4SemanticDensity	5.4 語意密度	
			5.5IntendedEndUserRole	5.5 適用對象	
3. Meta-Metadata	3. 後設資料	3. 後設資料	5.6Content	5.6 描述	5.6 描述
3.1Identifier	3.1.1Catalog	3.1.1 識別符	5.7TypicalAgeRange	5.7 適用年齡範圍	
3.1.1Entry	3.1.1.1 項目	3.1.1.1 項目	5.8Difficulty	5.8 困難度	
3.1.2Entry	3.1.2 項目	3.1.2 項目	5.9TypicalLearningTime	5.9 基本學習時數	5.9 基本學習時數
3.2Contribute	3.2 貢獻	3.2 貢獻	5.10Description	5.10 描述	5.10 描述
3.2.1Role	3.2.1 角色	3.2.1 角色	5.11Language	5.11 語言	5.11 語言
3.2.2Entity	3.2.2 實體	3.2.2 實體	6.1Cost	6.1 付費	6.1 付費
3.2.3Date	3.2.3 日期	3.2.3 日期	6.2CopyrightandOtherRestrictions	6.2 著作權及其他的限制	6.2 著作權及其他的限制
3.3MetadataSchema	3.3 後設資料綱要	3.3 後設資料綱要	6.3Description	6.3 描述	6.3 描述
3.4Language	3.4 語言	3.4 語言			
4. Technical	4. 技術	4. 技術	7.1Kind	7.1 種類	7.1 種類
4.1Format	4.1 格式	4.1 格式	7.2Resource	7.2 資源	7.2 資源
4.2Size	4.2 檔案大小	4.2 檔案大小	7.2.1Identifier	7.2.1 識別符	7.2.1 識別符
			7.2.1.1Catalog	7.2.1.1 編目	7.2.1.1 編目
			7.2.1.2Entry	7.2.1.2 項目	7.2.1.2 項目
			7.2.2Description	7.2.2 描述	7.2.2 描述
			8.1Entity	8.1 實體	
			8.2Date	8.2 日期	
			8.3Description	8.3 描述	
			9.1Purpose	9.1 目的	9.1 目的
			9.2TaxonPath	9.2 類別	9.2 類別
			9.2.1Source	9.2.1 來源	9.2.1 來源
			9.2.2Taxon	9.2.2 類別	9.2.2 類別
			9.2.2.1Id	9.2.2.1 識別符	9.2.2.1 識別符
			9.2.2.2Entry	9.2.2.2 項目	9.2.2.2 項目
			9.3Description	9.3 描述	9.3 描述
			9.4Keyword	9.4 關鍵字	9.4 關鍵字

After the release of standardized model, TOCWC began to implement the indexing system (Fig. 2) for storing OCW metadata. Learners can search content by just typing the keywords in any field. There are 62 courses listed in the system (TOCWC, 2011). We plan to collect 135 courses by the end of 2012.

Fig. 2. Screenshot of OCW Indexing System built by TOCWC.

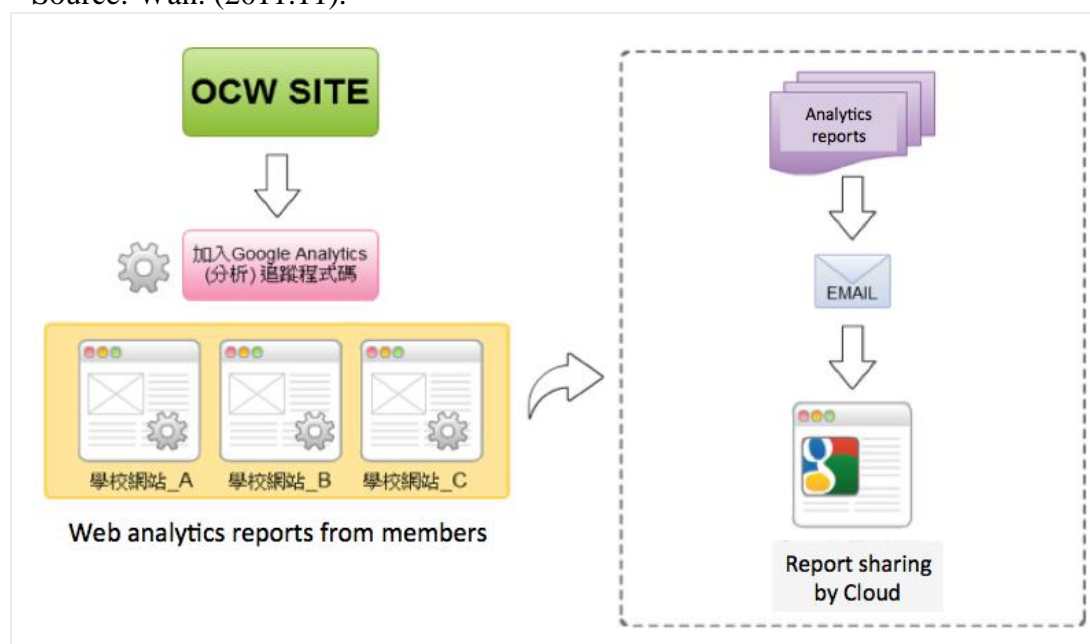
Source: TOCWC. (2011).



### Building Cloud Reporting Aggregator for OCW

Fig. 3. The Concept Map of TMU's Automatic Analytics Aggregator.

Source: Wan. (2011.11).



Google Analytics (GA) launched in 2005, which provide an excellent solution for analyzing the usage of a web. It can collect web analytics data, such as visitors, location, time to stay, pages each visit, real-time and easy. In 2010, TMU had shown the usage report of its OCW site by using Google Analytics. The most interesting observation was that more than one-third of visitors came from TOCWC (Wan, 2010.11). TMU, also became a board member in August 2011, has worked with TOCWC to assist members integrating GA into their OCW sites since 2011 (Wan, 2011.5).

The second step is to collect standardized web analytics reports from members' OCW sites. The Office of Biomedical Informatics, in TMU had designed an automatic analytics aggregator (Fig. 3) by using common cloud tools, which has got support from TOCWC (Wan, 2011.11). We've combined the Google Group with the auto-email function of GA. TOCWC had organized 3 online workshops for implementing GA report in each member's OCW site.

There are one third of the TOCWC members had joined. Monthly data have been collected from 9 members automatically. In the next step, we will build a mass data analytics in order to know the visitor behavior better.

### **Acknowledgements**

The authors thank the Taiwan OpenCourseWare Consortium (TOCWC) for their invaluable assistance in conducting this report.

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# **iOCW:Development of self-study support system with Kyoto University OpenCourseWare**

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## **Abstract**

We had made course search system “IOCW” with associative search capability. But there is a potential to be established with satisfy users varied demands. We are going to enhance the function of nowadays IOCW and then build a new and improved IOCW system. There is a fact that course video materials are too long for watching or studying properly. So we are going to divide course video materials into 5-7 min long segments and then build up new study materials. These materials are to form a new TOEFL ITP self-study support system, and make them searchable with our new IOCW system. Our goal is to develop new self-study environment with well-considered TOEFL leaning content and good associative search function for such divided course materials. And then make these delivered for everyone as new style of OpenCourseWare.

## **Keywords**

OpenCourseWare, IOCW, associative search, self-study, TOEFL

## **Today’s status of self-study support system.**

Today, there are already several examples of self-study support systems in existence, for example, The ALC net academy, NACSIS-CAT/ILL, and the MIT-X. These systems have some weaknesses. Amount of course is increasing, but almost subject’s contents are still not so rich. At least some courses materials or subjects are not suitable for ordinary person's study. It is the same situation in OpenCourseWare (OCW) or Open Educational Resources. There is model course but amount of model class quality courses is not so popular. MIT started MITX service. That service issues certification for any learner of free open education resources. This certification issued course does some motivation for its users. But we are not sure that these solutions work well enough to offer enough environments or specifications for self-study support systems.

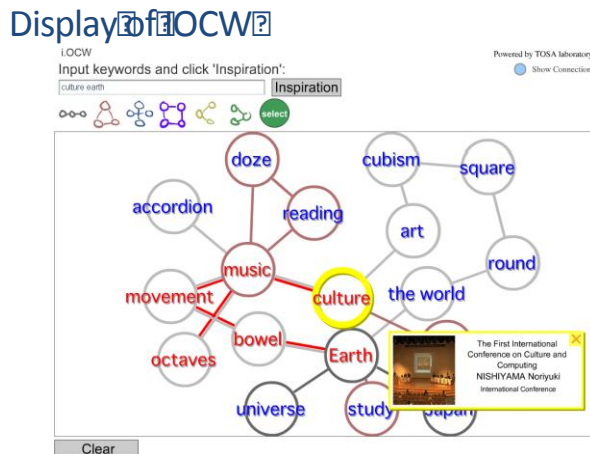
## **Purposes of self-study support system development in Kyoto University.**

We are going to make a new self-study support system. With it we try to challenge new and innovative ways of using Kyoto University OpenCourseWare (KUOCW) contents. There is a clear potential for development of a good self-study support system platform within Kyoto University. For one, in general, OCW contents are rapidly growing, and amount of video lectures in KUOCW has increased to more than 1000 and is still growing also attracting greater attention from others. Nowadays, KUOCW is collaborating with iTunesU and YouTube. Then it will become the most frequently accessed University OCW in Japan. Second reason, new usage of OCW must be found with making more effective academic contents free of charge. Third reason is to foster bigger study community. Only then such a studying community will be able to share the common knowledge, and in this way bridge and overcome universities and international border.

## IOCW System.

We have already built up the system called IOCW. IOCW concept is to enable user to navigate through more than 1000 course of KUOCW with associative search. The system will enable user to focus on those courses that are of particular interest to him or her. This is shown as figure 1.

Figure 1. Display of IOCW.



This is an application of i.Plot system that is developed by Tosa laboratory. i.Plot is the system used for visualization of user's association. Even if there is an input of information that is hardly related for any other matters, something will be associated and connected with the others. It function in a manner similar to human brain. Relationships between words are displayed with connecting associations between words that are imputed by the user. i.Plot search algorithm has 6 patterns of associative method (Thought forms). Set, Balance, Square, Cross, Dual, synthesis. These patterns are as figure 2.

Figure 2. Associative method (Thought forms).

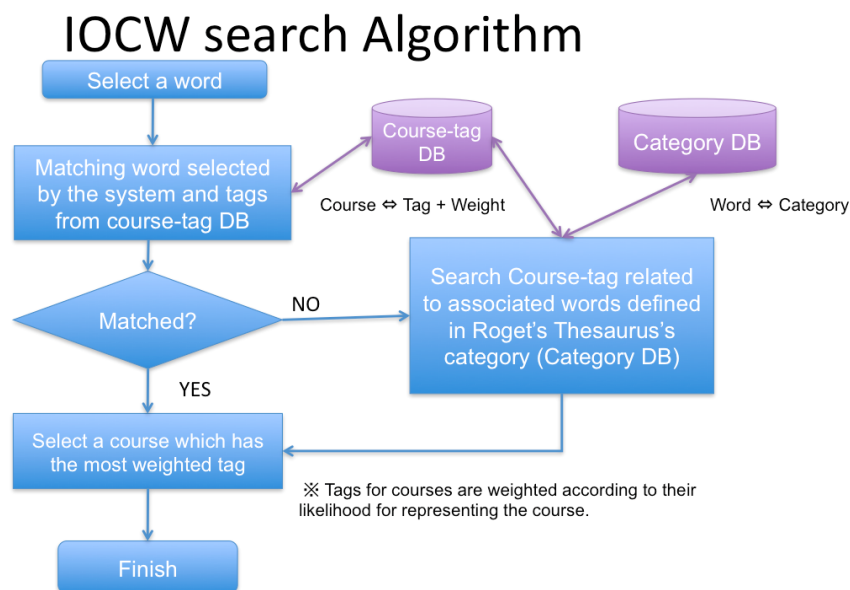
### Associative method (Thought forms)

- Set  
— 3 items are in order  
— Example: Hop, Step, Jump
- Balance  
— 3 items turn into one meaning  
— Example: Food, clothing, & shelter
- Square  
— One thing divides into 4 elements  
— Example: Seasons (seasons divided into 4)
- Criss Cross  
— Four ideas are derived from a central idea  
— Example: Old, young, male, female
- Division  
— Where one thing is composed of two things  
— Example a computer is both hardware and software
- Unification  
— Two things synthesize into one  
— Example: Radio and cassette turn into radio-cassette

IOCW search Algorithm is as figure 3.



Figure 3. IOCW search Algorithm

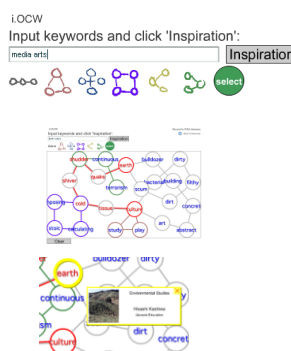


Procedure of IOCW search is as figure 4.

Figure 4. Procedure of IOCW search.

### Procedure of IOCW search (Method of operation)

- Input Method
  - 1. Input your favorite word into the form with English. then push inspiration button
  - 2. Associative words are Automatically displayed on the screen.
  - 3. Relevant OCW lecture will be displayed as a Pop-up



### Experiments with OCW/IOCW

We had committed the experiment. The examinee will study with KUOCW course. At that time, they will use IOCW system to get output of recommended KUOCW courses and study these courses. We had also committed related experiment that a pair of examinee will commit study same KUOCW course together. As a result of these experiments, we have found that study with IOCW system can be difficult. Reasons are varied. But main factor of study failure is caused by the length of OCW course, and too varied styles of studying of the examinees. But, through this process, we found a correct direction for improving our IOCW system. It needs to shorten KUOUW lecture videos for each user's demand. There is an earlier literature on a subject created by Open University of Japan.

### Improvement of IOCW system.

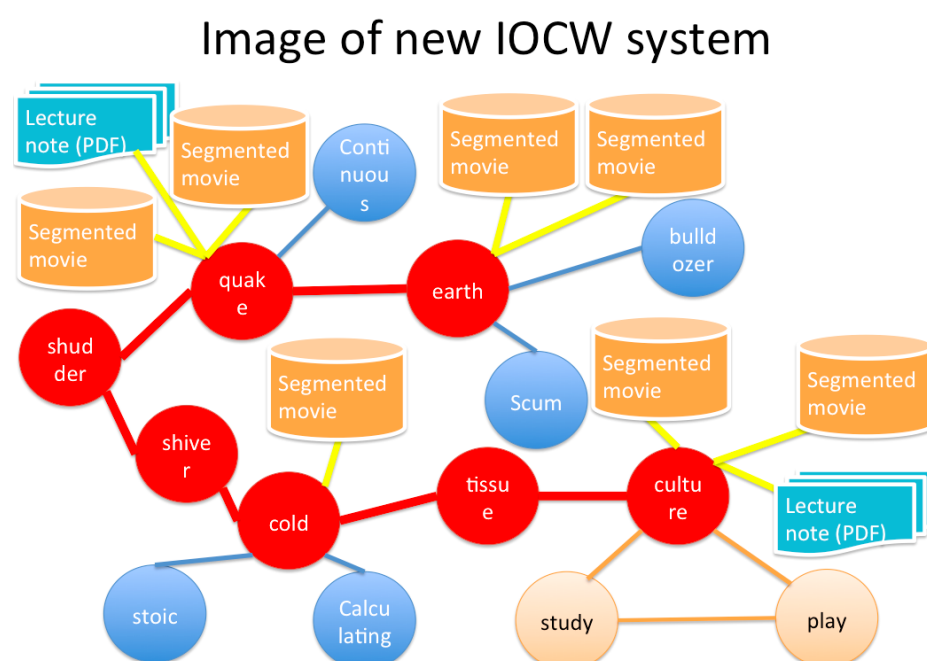
Improvement of IOCW system design requires dividing KUOCW study materials to make them searchable by iOCW system. At the same time, we have committed to put KUOCW information in order to build new IOCW system. We are trying to organize whole course

information. As we see ledger of KUOCW, we still feel a shortage of consistency in subject. If we reorganize the consistency, we have find that we can make it with editing ready-made KUOCW courses. So we have tried to find alternative use of ready-made OCW resources. And we are concluded to reorganize ready-made KUOCW materials for English education services for the first step.

### Build up TOEFL ITP study materials for next IOCW system.

We have already started to make TOEFL ITP study materials for new IOCW system. This trial is done with collaboration with Professor Akira Tajino, Center for the Promotion of Excellence in Higher Education of Kyoto University. Ready-made KUOCW course materials are going to be edited for learning of TOEFL ITP listening part. Approximately 50 to 90 minutes KUOCW course will be divided into many 5-7 minutes segments. Each will be classified by three categories (Beginner, Intermediate and Expert) and each will fit learners' or users English ability. Edited course materials (segmented lesson movies and lecture notes) will be made searchable via the next IOCW system. Image of next IOCW system is shown as figure 5. Then, we will try to find if university students who took the course of TOEFL education could achieve their self-study with IOCW system. We are planning to test educational effect of IOCW and KUOCW reuse study materials with these students. After these examinations, we are to prepare these study materials with IOCW system search for everyone who visits KUOCW site.

Figure 5. Image of next IOCW system.



### Conclusion

As a conclude, we have tried to find how to build up more effective self-study system using ready made OCW course materials and extend our development system IOCW. Then this paper examines systematic plan for IOCW. As more open and effective self-study environment could be available, value of OCW is going to be more valuable.

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## **“Learning challenges”: A framework and practical applications for assessment of deeper learning in online learning communities**

David Gibson, Alexander Halavais, Nils Peterson, Philipp Schmidt, Chloe Vareliidi

This paper describes a design framework for assessing deeper, connected learning in open learning communities. It begins by defining deeper learning and outlining a case for favoring formative, performance-based assessments over summative assessment. The paper describes the unique ways that online learning environments can operate to support and validate deeper learning through a new model that is in development by the Peer to Peer University platform, called “Learning Challenges.” The ideas below are based on a more extensive white paper the authors are working on. A draft version can be found online ([link](#)).

### **A framework for assessing deeper learning**

People naturally gravitate to others who share their interests, strengths, and aspirations in order to learn from them, share what they know, and build a sense of identity and community. These communities are often highly specific, and members may be part of the community only briefly (e.g., long enough to solve a problem), or for long periods of time (e.g., as members of a professional association). If you purchase a new mobile phone for example, you might seek others who have one to find out what they know about using it, tricks they have learned, and pointers that might help you. In long-lived communities, people can achieve deeper levels of learning and support through a process of giving and receiving feedback.

Achieving deeper learning in any community thus requires assessment by its members; a process that is strengthened when members become skilled at giving and receiving useful feedback. By “assessment,” we mean a set of processes and tools that provide helpful feedback to people to begin or advance their learning and to help guide their contributions to the community. In connected learning environments the assessment of deeper learning requires developing and supporting processes and tools to enable and encourage peers to become resources for each other.

The term “deeper learning” has been used by several organizations--Hewlett Foundation, Educause, Education Week, Alliance for Excellent Education, and others--as a way to highlight higher order learning skills. It has been defined by the Hewlett Foundation (2010) as learning that addresses five groups of abilities:

- mastering core academic content,
- critical thinking and problem solving,
- working collaboratively,
- communicating effectively, and
- learning how to learn independently.

The definition of deeper learning does not offer recommendations on the structure of learning environments that foster the development of these skills. The connected learning framework offers such recommendations. The outcomes of connected learning practices share many similarities with the abilities developed through deeper learning.

Historically deeper learning has taken place within “communities of practice” but traditional settings are hard to scale. These settings often include feedback from an expert mentor as well as peers at various stages of learning. The conservatory, for example, provides an environment for musicians and other performing artists to hone their craft through intensive practice and open critique. Kids might gather together to learn to ride skateboards, critiquing each other’s tricks and trying to impress the group. Research biologists learn at least as much in the lab as they do in the classroom, starting out by cleaning the equipment and gradually

becoming more adept at the procedures and ways of thinking that allow for the collaborative endeavor of discovery. Even in industries where apprenticeship has been replaced by more formal training systems, communities of practice and informal assessment and mentoring structures prevail. However, these traditional settings for deeper learning have a relatively high cost and are difficult to scale, limited by the number and size of the learning contexts and the availability of expert mentors. At the same time the shift towards a knowledge economy mean that there is an increased need for the deeper learning that occurs in such environments, and so it is necessary to create structures that support the kinds of intensive interactions of communities of practice, but allow for them to scale organically to serve new social demands.

As the shift towards a knowledge society increases demand for deeper learning competencies, emerging online environments promise to support the kinds of intensive interactions that foster learning in communities of practice, but allow for these communities to scale in ways that was not possible before. Our purpose here is to provide practical guidelines for further design and development of online experiences that support deeper learning. An examination of the literature on deeper learning and analysis of open learning environments and the learning patterns in communities of practice online, suggests a set of eight assessment practices that can effectively support deeper learning outcomes.

**1. Reveal the contours of the learning community.** Assessment provides the structure on which feedback within a community of practice is built. It indicates what body of knowledge is valued, and how this body of knowledge relates to others. It reflects the evolving collective knowledge and expertise of the community regarding what is important and what it means to be an effective practitioner in the community's domain of knowledge. What is important is assessed.

**2. Support rich problems and learning tasks.** Items on most current lists of "21st Century Knowledge and Skills" share some characteristics that make them hard to measure with standardized tests. They are complex, they are often multi-disciplinary, they manifest themselves as action-events rather than objects, and the learner has substantial autonomy and purpose in choosing the learning activity. When instruction is atomized, moving to scale often necessitates a move toward shallow assessments: multiple-choice exams and other problems with a single, expected solution. A move from atomized, individual instruction to a learning community makes possible the creation of authentic, complex challenges with a spectrum of potential good solutions.

**3. Embrace a diversity of autonomous learners.** An open learning environment will have learners in multiple roles including lurker, novice and expert, which allows each participant to find their best fit. In addition, each participant comes with their own motivations, interests, strengths and aspirations for learning and development. An appropriate assessment system provides the flexibility of allowing for multiple paths through the knowledge domain, and supports those learning at different levels of expertise, at different speeds, and within a variety of contexts.

**4. Develop assessment as a core skill.** The process of assessment--getting and giving useful feedback--is essential to individual learning and the development of a community. Expertise in any area of knowledge requires the ability to effectively analyze and evaluate the work of others, and by extension one's own work, in ways that can provide useful feedback. In many traditional learning environments, formal processes of assessment are left to teachers and other experts and are often conducted in private. In contrast, an open social learning community practices assessment and feedback in public and has mechanisms for novice members to observe good assessment practices by more experienced members of the community. An open learning environment is an assessment community.

**5. Create incentives for participation.** Open learning environments are driven by the process of participation, including participation in the assessment and feedback process. This process should both be inviting and easily understood. It should also create incentives for use--both as someone being assessed and as a peer or expert assessor. Some incentives are closely tied to the degree to which helpful feedback is seen as part of the informal community of learning. Assessment structures and practices that invite participation have flexibility “designed in” that respects individual choices, and makes the process of assessment an enjoyable and enlightening experience for peers, participants and the larger community.

**6. Provide internal and external validation of knowledge and skill.** The assessment structure and practices of a community provide signals or markers of a participant’s expertise and experience and create trusted symbols within the community as well as to the external world. In face-to-face communities, such markers can be informal (where someone is allowed to sit, who speaks to whom about what, who proposes or disposes of ideas, for example) as well as formal (job titles, stripes on a military uniform, and other kinds of identity and accomplishment badges) and in most cases are easily observed. Particularly in open, online environments, transparent and easily understood markers of expertise are essential. Those markers must also act as “boundary objects” (Star, 2010), capable of carrying social capital outside the community.

**7. Share transparent, authentic artifacts of practice.** An effective assessment system provides not only quick understanding of what people know (a certificate, badge or token), but also deep evidence of that knowledge and of how that knowledge was formed. Access to this process is itself an educational resource for learners, as well as grounding the more visible markers of knowledge in a transparent, reliable record. In face-to-face communities, for example, an award is often supported by a written citation that describes the specific works or actions that led to the recognition.

**8. Include mechanisms for its own evolution.** Knowledge in an open community of learning is essentially local; that is, it is continually determined by the community as it practices using the knowledge to solve authentic problems. The validity of the assessment system requires that it be generated by the community and that it be open to continual improvements. The community engages in a meta-learning process about its own knowledge and identity. This includes not just improving the validity of the assessment instruments--ensuring that the assessment measures what the community values--but also tracking the changing body of knowledge on a continual basis so that the assessments reflect the current state of the art, as well as the community’s collective valuation of elements of that body of knowledge.

### **“Learning Challenges”, a practical application**

Based on the above framework, P2PU has designed a new online learning model called “Learning Challenges” that aims to effectively support deeper learning outcomes. It provides an embedded assessment framework that supports problem-based learning and can scale to thousands of learners. Featured in this paper are some key features that are in development in the Peer to Peer University platform ([p2pu.org](http://p2pu.org).)

“Learning Challenges” start with definition of a complex problem that has multiple possible solutions. Background resources and access to more advanced peer-learners and mentors provide scaffolding for the user’s progress. These challenges are complex, often multi-disciplinary, manifest themselves as action-events rather than objects, and give a learner substantial autonomy and purpose in choosing learning activities. “Learning Challenges” facilitate collaboration between users, and make use of more advanced users to provide support and mentoring to those who follow.

Learning Challenges are built around four key features:

### 1. Tasks

Users learn most effectively when they are actively making objects that are useful in the real world. The process of "making" something is structured within learning tasks as an embedded way for a learner to showcase expertise. Tasks involve collaboration, allow users to take on different roles (such as guide, innovator, supporter) and foster independent research. Ideally, tasks involve prototyping, experimenting, revising, and iterating. The completed objects make it easier for a learner to demonstrate mastery in complex fields. Tasks can be interactive including video tutorials and games. Moreover, tasks can be grouped in "The Studio" a space for peers to share projects they are working on through four phases that embrace critical collaboration and giving feedback to each other. The first phase is "brainstorming and design," where peers can work together on ideas; the second phase is "prototyping," where peers can create models of their ideas and share with the community that gives them feedback; the third phase is "iterating," where multiple revisions occur; and finally "evaluation" of the best projects. (Appendix, Image 1.0)

### 2. Discussions

In order to engage learners in conversations that are meaningful and go beyond mere commenting, "Learning Challenges" support a "Discussions" section that allows users to share work, ask a question and most importantly start a debate. The debate tool can play an important role in assessment in both formal and informal ways. An informal example is when someone asks the crowd "Do you think this thing I've made addresses all the main criteria? Here's is why I think it does..." and when friends like it, comment on it, or add ideas. At a formal level, the same tool can provide a debate and response to formal scoring of an artifact or piece of evidence, if desired (Appendix, Image 2.0).

### 3. Badges

"Learning Challenges" enable the awarding of different types of **skill badges** that recognize a user's motivations, practices, or achievements and aspirations with respect to a particular topic or content area. Additionally, included are a set of **community badges** that recognize and incentivize connected learning practices in online learning communities. The badges earned in "Learning Challenges" are certified by various stakeholders and are shared via the Mozilla Open Badge Infrastructure to a learner's personal website, online profiles, and personal resume. The Open Badges framework is a way to record, track, and display your skills and knowledge across the web. The project team has been one of the original pioneers in the online learning badges world, helping develop the original concept and creating some of the first implementation prototypes.

#### A) Skill badges

Skill badges can be tailored to a particular content area or learning community: for example, a mobile game development project would define badges related to different programming skills such as mastery of the language "Objective C". However, skill badges are not confined to "hard skills"; they can also recognize 21st century skills such as problem solving or critical thinking. A detailed rubric for each badge guides the review process that leads to the badge. Skill badges hold value within a particular learning community, but signal achievements outside of that community. These are badges that are likely to end up on resumes and job applications.

Skill badges are awarded through a peer-review process that requires the involvement of users who have higher levels of expertise (e.g., mentors or users who already received the badge). Obtaining the badge unlocks the ability to participate in the awarding process. As the

community grows, more users become eligible to participate in the assessment and badge awarding processes.

## **B) Community Badges**

In Learning Challenges users develop assessment as a core competency. The habit of assessing peers' work by giving feedback is an act of "critical friendship" that develops higher abilities of observation and analysis while helping others improve. Users identify and copy acceptable practices and terminology, and they learn to improve their own work by giving useful critique to the work of others. Community badges are one mechanism that explicitly develops review and feedback between users.

In addition, each badge signals a particular "role" that the user is taking within the community. Community badges are awarded by community members to each other or automatically by the system based on trackable behavior of a user: for example, logging into the site at least 5 times in the last week, or answering 3 questions from others learners, which gets you "The Answering Machine" badge. Additionally it might be useful to consider negative roles within the community as well; for example, a non-active user is given a "Tourist Badge" (Appendix, Image 3.0).

## **4. Mentorship**

In "Learning Challenges" peers grow to become mentors. As they enter the P2PU community they are encouraged to take on the role of community members by embracing acceptable practices and terminology, and they learn to give useful critique to the work of others. Features such as "Discussions" and "Community Badges" are two mechanisms that explicitly encourage review and feedback between users.

Once a peer has completed a set of learning challenges acquiring badges that demonstrate mastery in a specific field, they have the opportunity to "level up" in the community by taking on the role of a P2PU Mentor. As a P2PU Mentor, one is required to guide peers on a one-on-one level by helping them discover ways to grow as learners. Those joining the P2PU mentorship program go through an initiation process by a P2PU Veteran, someone who has been a mentor for a long time. Additionally, mentors are assessed by their mentees as well as the system, which displays to mentees a mentors' response rate, how fast they answer questions and review work submitted.

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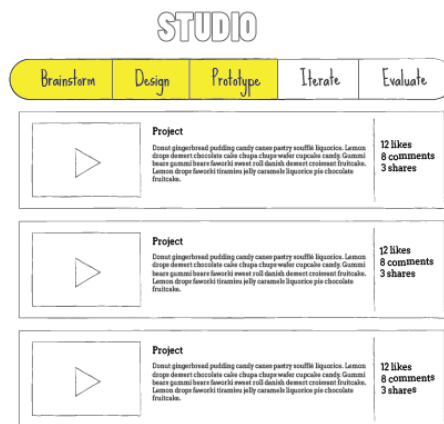
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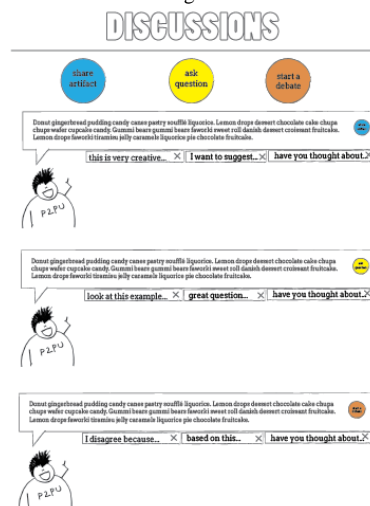
## Appendix

Image 1.0



Peers can use the Studio as a “making” space for critical friendship.  
Feature under development.

Image 2.0



Peers can share a project, post an idea or start a debate in discussions  
They can use the discussion tags to give feedback when writing a comment or reading it.  
Feature under development.

Image 3.0

## BADGE SUBMISSION



**WHAT**  
Dessert gingerbread pudding candy cream party soufflé linguine. Lemon drops dessert chocolate cake chaga chaga water cupcake candy.


**HOW**  
Requirements to get the badge:  
You need 3 peers to give you a rating of ⭐⭐⭐.

Challenges you can take this badge in:



Dessert

Work from peers who have this badge:



Peer 1  
Dessert gingerbread pudding candy cream party soufflé linguine. Lemon drops dessert chocolate cake chaga chaga water cupcake candy.



Peer 2  
Dessert gingerbread pudding candy cream party soufflé linguine. Lemon drops dessert chocolate cake chaga chaga water cupcake candy.




Peer 3  
Dessert gingerbread pudding candy cream party soufflé linguine. Lemon drops dessert chocolate cake chaga chaga water cupcake candy.

CHOOSE A MENTOR TO REVIEW YOUR SUBMISSION



Mentor 1



Mentor 2




Mentor 3

70% responsive

Save Draft

Submit

## BADGE ASSESSMENT



**WHAT**  
Dessert gingerbread pudding candy cream party soufflé linguine. Lemon drops dessert chocolate cake chaga chaga water cupcake candy.

**HOW**  
Requirements to get the badge:  
You need 3 peers to give you a rating of ⭐⭐⭐.

Challenges you can take this badge in:



Dessert

Work from peers who have this badge:



Peer 1  
Dessert gingerbread pudding candy cream party soufflé linguine. Lemon drops dessert chocolate cake chaga chaga water cupcake candy.



Peer 2  
Dessert gingerbread pudding candy cream party soufflé linguine. Lemon drops dessert chocolate cake chaga chaga water cupcake candy.



Peer 3  
Dessert gingerbread pudding candy cream party soufflé linguine. Lemon drops dessert chocolate cake chaga chaga water cupcake candy.

[LINK TO WORK](#)

REFLECTION QUESTION#1

Dessert gingerbread pudding candy cream party soufflé linguine. Lemon drops dessert chocolate cake chaga chaga water cupcake candy. Creamy lemon squares lemon brownies lemon cake lemon drops lemon water cupcake candy. Creamy lemon squares lemon brownies lemon cake lemon drops lemon water cupcake candy. Creamy lemon squares lemon brownies lemon cake lemon drops lemon water cupcake candy. Creamy lemon squares lemon brownies lemon cake lemon drops lemon water cupcake candy.

RUBRICS

Chocolate cake chaga chaga water cupcake candy

⭐⭐⭐

Chocolate cake chaga chaga water cupcake candy

⭐⭐⭐

SUGGESTIONS

I want to suggest...

have you thought about...

Save Draft

Submit

Peers can look at others work to inform their submission and request specific mentors to review their work  
When assessing another peers submission, peers can use rubrics and make suggestions using “feedback tags.”  
Feature under development.

502

## **Making knowledge preservation accessible - Viidea**

Peter Keše and Jure Čuhalev, Viidea, [peter.kese@viidea.com](mailto:peter.kese@viidea.com), [jure@viidea.com](mailto:jure@viidea.com)

### **Abstract**

Viidea's mission is to understand, improve and simplify online knowledge preservation efforts by making lecture recording and publication process simple, affordable and accessible. In the last six years, we have developed an advanced video lecture dissemination platform that hosts a multitude of educational web sites, including world's largest publicly supported OER video site – VideoLectures.Net with more than 15,000 online videos. We have now made this technology available as a service. It is aimed at supporting and simplifying the capturing, publication and dissemination process as well as providing rich multimedia interfaces offering close-to-reality online watching experience.

### **Keywords**

OER, knowledge preservation, lecture dissemination platform, video hosting service, integrated assessments

While there are many ongoing software development projects in the OER community focused on lecture recording, video processing and LMS, it is still hard to get to a complete reliable solution that solves more than just one problem. While developing and maintaining our video hosting platform along with our clients, we have learned that in most cases the real issues are not just installing several pieces of software on several servers, but rather making this service enterprise-like. This includes keeping it accessible, available, reliable, scalable and maintainable while at the same time quickly solving day to day issues dealing with internet traffic glitches, following software and third party application updates, social network platform API changes, etc.

There are several ways how institutions are approaching these problems. A common case is to come up with a do-it-yourself solution, quite often initially supported by enthusiastic student and staff involvement. In the long run it turns out that the project starts requiring a multitude of new skills, the students come and go and the enthusiastic staff gets replaced by various IT system professionals. The project and the expenses normally outgrow initial expectations, but the flexibility of having a customizable platform might justify the extra costs if the project is well maintained. Another approach is to yield some of the lecture's multimedia potential and settle with free online services like YouTube and iTunes for lecture dissemination. Even though YouTube might not provide either a perfect or a most flexible service to educational video content it might still be a good fit for small institutions – in our endeavors, we have commonly come across various neglected and abandoned custom-solution video sites with owners asking us to help and find a way to keep their content online without the unexpected maintenance costs.

Based on our own experience and while listening closely to our partner's needs we have learned that a large majority of our customers would be much better served with a more capable, customizable education-tailored-YouTube-like online service than with an extensive and expensive software and support package that runs in their own datacenters and CDNs.

At Viidea we have therefore solved the video hosting problem by turning it into a streamlined online service, tailored specifically for educational content and educational organizations. While hosting and maintaining a separate web site for each educator, we have also learned when and how to step out of the way and let the educators organize their knowledge, their sites and their content and access policies according to their desires. The Viidea service is fully white-labeled and custom brand-able. We even let the organizations use their own Internet domain names while we are taking full care of content, site hosting and availability.

Having an educational video web site is nowadays almost as simple as having your own Wordpress blog.

Nevertheless, running your own video site is still more complex than running a simple blog, just as publishing a video is more complex as publishing a piece of text. But we are doing all we can, to make it as easy as it can be. There is no need to worry about encoding the videos into exactly correct video codecs, formats and bit rates anymore: Viidea hosted web sites accept uploading of all common video formats and will automatically encode videos into all required target formats in order to support HTML5, Flash, mobile; proprietary and OpenSource platforms. For partners who have invested into automatic lecture capturing service like OpenCast Matterhorn, we provide an automated pluggable interface that will make recorded lectures automatically appear on their Viidea powered sites.

At the same time, Viidea lets its hosted knowledge shine by allowing customers to attach matching presentation slides to their videos and synchronizing them to video timeline. Rather than mixing slides and presentation directly into the video, Viidea handles and processes video and slides separately but presents them together again at the playback time, thus preserving high pixel quality of slides even on a low-bandwidth network and letting the site visitor choose whether to focus more on slides, videos or both at the same time. While we can integrate into automated slide capture interfaces, many of Viidea's clients just upload their presentation files directly into to their Viidea sites and use a simple built-in web interface to sync the slides to the video timeline, or they can ask Viidea to provide them synchronization as a service. In order to eventually fully automatize this process, Viidea is building an open-source slide capture system, that people will be able to install on their laptops, plug in off the shelf USB video capture devices and capture their slides directly off the VGA cable connected between presenter's computer and the video projector.

Educators can choose to use the Viidea's built-in customizable video archive web site to let users navigate and watch their videos, or as some organizations do, they can simply disable Viidea's web page and rather embed videos directly into their existing web and LMS sites while using Viidea just for video hosting.

Viidea is constantly developing and evolving education-specific features of its online service and thus continuously improving the learning experience based on content that clients already have. An interesting up-coming feature is adding assessment capability to pre-existing video lectures. The interface that Viidea is demonstrating at OCWC Global 2012 allows authoring questions, quizzes and tests and inserting them at predefined times into hosted videos. When enabled, video playback will pause whenever a quiz is encountered and wait for learner's solution to be entered before continuing playback. Viidea will provide an integrated assessment statistics collection system as well as pluggable APIs that clients can use to transfer the statistics into their LMS databases. Viidea's long term commitment is to let educational institutions put both, their knowledge, their training as well as assessments online and in many cases provide a completely online educational process with the printed diploma certificate being the only physical object involved in the process.

## **Moodle 2 for OER: the good, the bad and the ugly**

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### **Abstract**

Moodle 1.9 is no longer being actively developed. By July 2012 it will reach end-of-life meaning that even serious security issues will no longer be addressed. All sites, whether for paying students or Open Educational Resources, hosted on Moodle 1.9 (and earlier) should be working on a migration plan.

This poster session will look at the way the Open University of the United Kingdom tackled the problem for their student-facing systems and LearningSpace OCW site, both of which were based on the same heavily-customised Moodle 1.9 platform.

We will briefly cover how we assessed alternative platforms, looking at how well they implement our required functionality and the cost of migration. We continue to wish to use open technologies, and to manage LearningSpace in a sustainable way based on mainstream activities.

We will share our thoughts on what's good, bad and downright ugly about Moodle 2 for OER, looking at everything from support for licence choice and other IP issues, publishing RSS feeds, support for peer-to-peer learning, search engine optimisation, ease of re-use, support for ratings and reviews, activity tracking, self-assessment, flexibility of structuring materials, mobile learning, support for content authoring and management...

We hope the audience will share their experiences as well. We wish to continue to collaborate with other educational institutions and the Moodle community to improve Moodle 2 so that it better meets the needs of OER. Our aim is that as a result of this presentation we will have a better picture of the problems facing not just the OUUK but the wider OER Moodle community. We hope to gather offers of help in any of the following areas: setting requirements, developing code, testing, translating or documenting new features. These can be taken to the core Moodle development team help us make better progress together.

### **Keywords**

Moodle, technology, platform

### **Details**

In a project lasting just over a year, the Open University UK has moved its virtual learning environment from a heavily customized Moodle 1.9 platform to Moodle 2. In order to make such upgrades easier in future, we have adopted a “no core customizations” approach and found alternatives which fit better in the modular plug-in methodology while still delivering the same, or broadly similar, functionality to our users. This new platform is being rolled out during 2012 to students and course teams as new presentations begin.

With that work completed, we can now turn our attention to a range of other Moodle 1.9 platforms which run the same codebase as our student VLE. LearningSpace, which is a part of the [OpenLearn](#) offering providing our OpenCourseWare materials, is the first platform to be considered.

The first phase of work considered the range of functionality that the OUUK felt was important to LearningSpace and compared this against a number of content and learning

management platforms. We used a similar approach to the [OCWC's platform comparison grid](#) (the OU-Moodle column in this grid currently refers to Moodle 1.9) giving consideration to the following aspects of the platforms:

- publishing RSS feeds and other linked data and metadata export formats
- support for peer-to-peer learning and collaborative activities
- search engine optimization
- ease of re-use
- support for ratings and reviews
- support for sharing learning pathways
- activity tracking and certificates of participation
- self-assessment
- flexibility of structuring materials
- mobile learning
- support for content authoring and management

The key driver for the OUUK is for the production process to be as streamlined as possible after materials are created for our students. We have therefore chosen to retain a Moodle platform for our OpenCourseWare content.

In making our analysis, we have gained our own impression of what Moodle 2 does well, badly and doesn't support at all as an OpenCourseWare platform.

#### The Good:

- support for peer-to-peer learning and collaborative activities with shared user profiles and a range of learning activities;
- support for ratings and reviews through polls and surveys;
- support for sharing learning pathways through course tagging and url sharing;
- activity tracking and certificates of participation through log reports and the certificate module;
- self-assessment through quiz activity;
- mobile learning through mobile-optimised themes; and
- ease of re-use through backup sharing and the MOOCH community hub (though it would be nice to share back-ups in other formats).

#### The Bad:

- Support for license choice exists but is not linked throughout the platform and license choice does not have any impact on controlling access to content.
- Courses can be structured flexibly with custom categories, but a course can only exist in a single category; also course layouts are generally linear.
- Support for content authoring and management is present, but tools for applying consistent course presentation for every course are lacking.

#### The Ugly:

- There is limited metadata held about courses and no support for publishing course information as RSS feeds, or other linked data or metadata export formats; if such feeds are added, it is difficult to display links to them within the site and to display the extra course metadata in course browse and search links.
- Search engine optimization advice suggests that keyword-rich urls are critical to good search rankings, but Moodle does not offer any way to swap to a 'friendly' url structure.

As we enter a phase of developing Learningspace on Moodle 2, we hope to work on improving some of these aspects of Moodle. We also hope to benefit from the experience of others interested in Moodle 2 as an OCW or OER publishing platform, particularly if you disagree with our analysis of the good, the bad and the ugly and have suggestions for workarounds or code to share.

We wish to continue to collaborate with other educational institutions and the Moodle community to improve Moodle 2 so that it better meets the needs of OER. Our aim is that as a result of this poster session we will have a better picture of the problems facing not just the OUUK but the wider OER Moodle community. We hope to gather offers of help in any of the following areas: setting requirements, developing code, testing, translating or documenting new features. We will liaise with the core Moodle development team help us make better progress together.

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## **OER creation and collaboration: What difference can open technology make?**

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### **Abstract**

Tufts University Sciences Knowledgebase (TUSK) is a powerful enterprise educational knowledge management system suited for institutions with longitudinal, integrated health sciences curricula that require competency-based learning, teaching and assessment. TUSK also provides tools to publish content to Tufts OpenCourseWare (<http://ocw.tufts.edu>) which provides health sciences content to the world's teachers and learners.

Tufts University School of Medicine created TUSK in the mid 1990s and has been developing and sharing this technology since 1997. Currently schools in the US, India, Sweden, Africa, Saudi Arabia, and South East Asia are using or planning to use TUSK. TUSK's release date as open source software was March 2012 (<http://opentusk.org>).

TUSK is being used as a platform for curriculum co-development and global sharing across institutions. An export-import tool allows easy movement of content across institutions. In recent years, we collaborated with our Indian partners at Christian Medical College Vellore to make TUSK tools and content available through mobile phones. With full mobile access, TUSK facilitates collaboration and training of students, volunteers and staff in the field to build capacity in rural locations where collaboration and communication are typically quite difficult.

TUSK itself is comprehensive, but an application programming interface in development will enable other tools to easily connect with it. In resource poor areas with scarce IT professionals, TUSK provides a broad constellation of services that are basic to health sciences training – including the provision of course content and course management, tools to create Virtual Patients to train students in clinical decision making in a safe environment, administrative tools for course and student evaluation, and tools to track experiences in clinical settings. For institutions without technical support, future hosted services in “clouds” are being considered.

Course content developed at Tufts University has been published through TUSK to our OpenCourseWare site. But this is not the only way to share content. Any type of content can be developed at one institution and then exported to another for local customization. Creating high quality content is time consuming, including creating good virtual patients. TUSK's Virtual Patient (VP) tool was created according to the international MedBiquitous standard for VPs ([http://medbiquitous.org/working\\_groups/virtual\\_patient/index.html](http://medbiquitous.org/working_groups/virtual_patient/index.html)) that facilitates sharing across institutions as well as enabling adaptation to local curricular needs.

Now that TUSK is open source, together we can build and shape TUSK to encourage the development of OER's, as faculty, as institutions, and as a global network. Please join a growing global community of users to help develop our next innovative open tools to support teaching and learning.

### **Keywords**

Open Source, Health Sciences Education, Medical Education, Learning management system, Knowledge management system.



## **Introduction: Development of TUSK leading to Release as Open Source**

What is the Tufts University Sciences Knowledgebase (TUSK) and why is it important that it has become open source? TUSK is a course management application. It is a curriculum management tool. It is a content management system. It contains applications for teaching and learning. It contains school-wide administrative tools. These are the reasons why TUSK appeals to both low resourced health sciences institutions in the developing world and to health sciences institutions in highly structured accreditation environments. Over the last fifteen years, Tufts' health sciences schools, along with a number of governmental bodies and foundations, have supported a small number of developers and software planners to produce TUSK. Through a "no cost evaluation license," we have been sharing TUSK with US and international schools for over 10 years. From TUSK's inception, our intention has been to openly share the software so that a community of developers might form around this software concept.

Only last month, March 2012, the TUSK software was released <http://opentusk.org>. Supported by the Tufts University administration, TUSK staff took the radical step of halting all work on enhancements and new feature development and began the hard work of preparing the code for its public debut. Among the tasks addressed, this work included upgrading Apache, simplifying the installation process, checking code for security issues, removing unused database tables, determining minimum database content, and assuring that information embedded in our database from the US National Library of Medicine could be openly distributed.

Why did Tufts University want this to happen? The release of TUSK as open source will hasten the speed of TUSK's development, to the benefit of Tufts, other institutional users now using TUSK, and future users internationally. The release of the code is expected to create the community needed to build an application more useful than one institution's staff can accomplish. It is our belief that the development of the TUSK software can contribute significantly to the transformation of health sciences education in ways useful both within and across disciplines and in diverse global settings. Simply stated, we believe this development can support improved health sciences education and thereby improve clinical services and health for people across the world.

## **About TUSK**

TUSK is a dynamic multimedia knowledge management system that supports faculty and students in teaching and learning. TUSK provides a portal to an integrated body of knowledge and a means to personally organize the vast array of health information through its related applications. TUSK also provides content and curriculum management, reporting, and assessment tools customized for health sciences education. Begun in 1997, it serves the Tufts School of Medicine, the School of Dental Medicine, the Cummings School of Veterinary Medicine, the Sackler School of Biomedical Sciences and the Public Health and Professional Degrees Programs at Tufts University. TUSK is also in use at four other medical schools domestically. To support the University's Global Health mission, TUSK has been implemented in Uganda, Tanzania, and the Democratic Republic of the Congo, two medical schools in India, a medical school in Sweden and a dental school in Saudi Arabia. Planned implementations are in Ghana and other East African schools of public health and veterinary medicine, and a university in Thailand. TUSK is also used for publishing course materials to the Tufts OpenCourseWare (OCW) site, supporting Tufts' participation in the international Open Educational Resources initiative.

TUSK is based on the LAMP framework of open-source technologies - Linux, Apache, MySQL, and Perl. Its features extend beyond course management by focusing on the full educational work flow of a health sciences institution, including curriculum delivery,

curriculum management at course and institutional levels, clinical training management, and every level of assessment including strict requirements for national accreditation. TUSK is built as a content repository and management system using the United States National Library of Medicine's Unified Medical Language System as its controlled vocabulary for metadata to describe and manage its content. Users thus have the ability to reuse existing content in new contexts across all the health sciences, which is critical to the cross-disciplinary and integrated curricula that are now the standard for health sciences education. New accreditation standards for many health sciences programs require rigorous curriculum mapping with horizontal and vertical integration of content across courses and clinical training, as well as assessment tools that provide proof of competencies attained based on specific objectives for every level of education and training. TUSK includes health science-specific tools such as curriculum reporting features, patient logs, a virtual patient simulator, and tools for simulated patients for Objective Structured Clinical Examinations that are used as preparation for national board examinations in the United States, the only route to licensure. TUSK tools and functionalities, such as virtual patients and competency tracking, are developed in compliance with the American National Standards Institute (ANSI) MedBiquitous standards to facilitate sharing of resources and facilitate standardized reporting.

The strength of TUSK's curriculum management and curriculum inventory processes was recently recognized by the Association of American Medical Colleges (AAMC) when it listed TUSK as one of the limited number of providers of these types of services (<https://www.aamc.org/download/249510/data/cipvendordocument.pdf>). The Tufts Technology for Learning and Health Sciences director is also recognized as a leader in this area, currently co-chairing an AAMC-commissioned international standards-setting group for curriculum inventory (including curriculum content, competencies, assessment methods, hours and type of delivery and structure).

### **TUSK Core Principles**

TUSK's development has been guided by the following core principles:

- to provide a comprehensive system for one-stop shopping for most needs of a health sciences institution
- to support the work flow of an academic health sciences institution
- to meet rigorous accreditation standards
- to enable knowledge management on a personal and school-wide level
- to reflect an understanding of the connections between school and clinical affiliates
- to provide reusable content across the system
- to provide access to content that is open to TUSK users across the barriers of schools, courses, appliance (phone or computer), and time
- built to:
  - foster horizontal and vertical integration
  - support cross disciplinary learning
  - support competency-based education
  - support local/school-based administration

These principles have resulted in a system that provides tools to:

- promote curriculum management and mapping
- facilitate clinical teaching
- allow content management and reuse
- support personal knowledge management
- facilitate student and course management
- foster distance learning through mobile access to content.

### **Facilitating Collaboration**

TUSK's applications have been developed to support and encourage communication, collaboration and coordination of users not only within an institution's network, but across networks linking multiple institutions. TUSK is being used as a platform for curriculum co-development and global sharing across institutions. An export-import tool allows easy movement of content across institutions. Any type of content can be developed at one institution and then exported to another for local customization. TUSK's modular content system increases the flexibility for each user and facilitates adapting content to local needs and requirements (Lee, Crane, Albright, 2012). The virtual patients in TUSK developed according to the Medbiquitous standard facilitate sharing across institutions, while allowing customizations based on local practice.

### **Application to Low Resource Institutions**

Under consideration is the development of a SaaS, software as a service, version of TUSK to support individual institutions as well as networks of institutions. For institutions operating in low-resource areas or areas vulnerable to disasters, functioning networks can be huge assets (Lee et al., 2012). Using a SaaS version of TUSK would relieve institutions from having to hire or build expertise in the LAMP constellation of skills which tend to be scarce in the developing world. This would enable stable support of large networks. TUSK provides a broad constellation of services that are basic to health sciences training, including course content and course management, tools to create Virtual Patients to train students in clinical decision making in a safe environment, administrative tools for course and student evaluation, and tools to track experiences in clinical settings.

### **Mobile Access**

TUSK content, as well as announcements, discussions and schedules are available via handheld mobile devices. TUSK seamlessly detects that a person is using a cell phone and automatically adjusts the content's presentation so that it is properly formatted for a small screen. Users are also given the option to use TUSK classic if they choose for iPhones or iPads.

With the development of these mobile applications, TUSK is positioned to expand greatly the scope of the networks it may serve. In recent years, we partnered with our Indian colleagues at Christian Medical College Vellore to make TUSK tools and content available through mobile phones for clinical training at remote sites. Not all TUSK tools are mobile ready but an open source community can further develop the style sheets needed to enable complete mobile access. With full mobile access, TUSK facilitates collaboration and training of students, volunteers and staff in the field to build capacity in rural locations where collaboration and communication are typically quite difficult.

## **The Future**

Now that TUSK is open source, together we can build and shape TUSK to encourage the development of OER's, as faculty, as institutions, and as a global network. TUSK can open up the world of training to more students in rural locations, particularly those who have internet access only through cell devices. At the same time, institutions can have a powerful tool to manage their own curricula across dozens of programs within a complex university or across a national or regional network. Please join a growing global community of users to help develop our next innovative open tools to support teaching and learning.

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## **Opening Up the Curriculum: Midwifery Open Education Resources: who benefits?**

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### **Abstract**

This poster highlights the case for developing midwifery OERs in a UK midwifery undergraduate programme and who will benefit from the development. Students will be able to access the learning materials across their programme, currently this is restricted to the module they are enrolled on through the virtual learning environment (VLE). The Midwifery lecturers will have a central resource for all materials, avoiding duplication of effort and resources. The open repository will enable engagement with the students' practice mentors as the midwifery curriculum will become accessible and as a result address the potential theory practice gap. The materials will be available to prospective DMU students and their teachers so they can assess the quality of teaching at DMU, which will assist them in selecting the correct subjects for university entry and overall better prepare them for entry to a midwifery programme.

Importantly, it will support countries abroad where they have a need for high, quality, up to date midwifery materials to develop the care for childbearing women and babies.

### **Key words**

Midwifery OERs, sustainable. Accessible to practice mentors, bridging the theory practice divide.

### **Poster Paper**

#### **Opening Up the Curriculum : Midwifery Open Education Resources – Who Benefits?**

##### **Background**

The author believes there is a strong case for developing midwifery OERs from a UK midwifery undergraduate programme. There are very few midwifery OERs developed to date. The TIGER (transforming interprofessional groups through education resources) repository has recently released OERs applicable to midwifery in areas such as emergency skills drills, Parenting and Disability and Independent and Supplementary prescribing (<http://tiger.library.dmu.ac.uk>) However, there are many advantages to developing more midwifery OERs for use both home and abroad.

The author has recently reviewed Africa OER as it has released a midwifery training programme in the form of a CDROM developed by the University of Malawi and Kumuzu College of Nursing (<http://www.oerafrica.org/ResourceResults/tabid/1562/mctl/Details/id/37994/Default.aspx>).

The file to download was found to be 133mb and there was no facility other than a 'taster' to view the materials. However, it was observed during a further exploration of the resource that there were links to baby milk manufactures. This discovery was of concern as this contravenes the International Code of Marketing of Breast-milk Substitutes ([http://www.who.int/nutrition/publications/code\\_english.pdf](http://www.who.int/nutrition/publications/code_english.pdf)).

A further example, in the UK, is U-Now from the University of Nottingham ([www.unow.nottingham.ac.uk](http://www.unow.nottingham.ac.uk)). It has materials which are potentially useful to midwifery but they are grouped under the Faculty of Medicine and Health Science and lack of a search facility within the resources makes it difficult to readily determine the actual midwifery resources.

### **The MORE Project**

The MORE project will develop an open repository solely with midwifery learning materials that midwifery students to be able to access across their programme. Currently materials are restricted to the module which students are enrolled on through the virtual learning environment. Therefore as they progress through the midwifery programme they are unable to access materials from earlier parts of the curriculum, Additionally the Midwifery lecturers will, for the first time, have a central resource for all midwifery materials thus avoiding duplication of effort and resources. A further benefit of the open repository will be to give access to the midwifery curriculum to the student's midwifery mentors when they are working in clinical practice, which will address the potential theory practice gap.

The materials will be also be available to prospective DMU students and their teachers so they can assess the quality of teaching at DMU, assist them in selecting correct subject choices and overall better prepare them for entry to a midwifery programme.

Importantly, this development has the potential to support countries that have a need for high, quality, up to date midwifery materials to educate and professionally develop health care staff who care for childbearing women and babies.

### **The following work packages are in progress during the project phase:**

- The collection and transformation of first year midwifery teaching and learning materials used within an undergraduate programme into OERs. Year 2 and 3 materials will follow.
- Evaluation of the materials by first year midwifery students and practice midwifery mentors who have no experience of using open educational resources to date.
- Evaluation of the use of the midwifery OERs by local Further Education Colleges with students who are considering a career in midwifery
- Work with international links to disseminate and promote use of Midwifery OERs which have the potential to up skill and educate midwifery practitioners
- Work with key midwifery publishers to promote their contribution to MORE by release of some of their materials under creative commons licenses.

### **Sustainability**

The midwifery resources are currently in use within the midwifery curriculum so are updated yearly for each cohort of students in the programme. Therefore, once the midwifery repository is established the midwifery OER materials will be readily available to all lecturers on the Programme Team and the materials will remain current and evidence based as they continue to be used year on year. This will be a live and evolving repository. Students will also be able to upload their learning resources to benefit other midwifery students.

### **Engagement with stakeholders within the MORE Project**

- Midwifery students on the first year of midwifery programme plus their practice mentors will use a selection of OERs from the repository and their experiences will be evaluated.
- There will be links made with local Further Education Colleges that DMU currently have partnerships with to assess their view of the repository.
- Through the Lead Midwifery for education we will liaise with the International Confederation of Midwives to promote repository internationally
- Identify midwifery publishers who are willing to release materials within the repository.

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# **Proposed strategy to decrease the learning gap between academic course materials and software supplier support documentation**

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## **Abstract**

The teaching and assessment of theoretical topics in electronic engineering is often supported by the use of software simulation packages. Some of these simulation packages have the ability to implement the theoretical idea in a practical piece of electronics hardware. A particular learning problem has presented itself in the teaching of signal processing problems using Matlab using an add-on called the Wavelet Toolbox. Wavelets are a new area of signal processing, useful for analysing and processing signals in what is called the scale domain.

For example, using this technique, signals can be compressed to use less storage space on a computer's hard disc. The well-known MP3 compression algorithm uses a kind of wavelet called a binlet. A learning gap existed between conventional academic materials in the subject and Matlab's documentation. In order to help bridge this gap a Wavelet Toolbox Guided Learning Handbook (WTGLH) was developed (Oliver, 2009). This WTGLH has been useful at Coventry University for teaching a particular group of postgraduate students. An International Version of the WTGLH (IWTGLH) is now being developed to address a wider market for the materials. There are potential uses in many other Universities and industrial Continuing Professional Development Situations. The lessons learned from the creation of the WTGLH are explored so as to develop a strategy to reduce the theory-practice 'learning gap' for materials that support software in general. This paper supports a poster paper to be presented at the conference.

## **The learning gap**

The learning problem is described thus. Software suppliers produce products that are generic. They serve industrial, government and education clients. The comprehensive help systems produced by these suppliers can consist of a shelf-full of manuals or the electronic equivalent: namely gigabytes of help files, Adobe Acrobat and Word documents. Lecturers produce learning materials that serve particular topics in particular modules that serve particular courses and then set assignments based on those topics. When an assignment is set using a software package, students may be baffled by the copious materials provided by the software vendor. The distance between theoretical academic materials and vendor practical materials is something the author has now dubbed the 'learning gap'. Gabriel Reedy's SCORE Fellowship Report (pre-publication) describes academics in a number of fields discussing the theory-practice gap in general. They wanted students to 'make sense of theory as it pertains to their practice'. Educational institutions have devised a variety of solutions for this kind of problem. The IWTGLH is just one of them.

## **Who is writing in and around the learning gap ?**

A wide variety of staff produce materials for students. Staff on academic contracts tend to produce material that supports theoretical topics well and act as module leader. However University engineering departments have other staff like departmental development officers whose main responsibility is supervising laboratory work. These staff may also generate materials to benefit students, though co-ordination with academics is needed so that proper linkage into module targets can be achieved. In some contexts staff support units may be required to generate supportive materials but it is not normally the case that engineering-specific materials can be created.



### **Nature of software used**

Certain software products have wide support in the HE community. This may be because of their wide applicability, utilisation in places of graduate employment and/or advantageous educational pricing. The basic theory of an academic subject does not change very fast. This is why syllabi may be set several years in advance. However, the software packages that support that subject may be up-dated up to 4 times a year. This constant change can discourage staff from providing specific software-tutorial resources.

### **Strategy to fill learning gap with appropriate materials**

The various problems delineated have solutions that can never be perfect. The strategy is developed initially by way of a case study

The topic of wavelet transform-based signal processing algorithms is relatively new. Graps (2004) reports that this started with Mallat's work in 1985. When preparing to teach this subject the author noticed that there was an adequate supply of books that covered wavelet theory. There was also a Wavelet Toolbox that was part of the popular mathematics software Matlab. There was a substantial gap between these resources and the Wavelet Toolbox Guided Learning Handbook was developed to fill this gap (Oliver, 2008; Oliver, 2009; Oliver, 2010).

Development of the Handbook followed a number of guiding philosophies, which were not all made explicit at the design stage, but became clear as work progressed.

1. The main pages needed a friendly, relaxed writing style.
2. The major materials were to be written in a style conventional to the materials. For example, theoretical materials used the Coventry University Harvard style of referencing. Laboratory worksheets were written in the exhaustive style where students were told exactly which button to press on which menu of the software to do a particular function.
3. The materials should not reproduce materials that were already well covered in textbooks or software documentation but should provide a useful bridge between these.
4. There would be student and staff evaluations that would be taken into account as the handbook was developed.
5. The character of certain technical information web sites was to be the model that was followed. The sites tend to be simple, with many downloadable documents and little web designer frippery (e.g. Flash movies).

Results of evaluations have not yet been published but amidst the student groups at Coventry University there has been a clear interest in the subject area and a number have gone on to base M.Sc. theses on the topic of wavelet signal processing.

The term strategy has a considerable number of definitions, appearing in warfare, politics and business. One interesting one which strongly resembles what happened is that strategy is 'consistency in behaviour, whether or not intended' (Mitzberg & Quinn, 1988).

From the strategy that developed from this case study and from other considerations, a strategy for the more general problem that forms the title of this paper is developed.

1. The precise nature of the learning gap needs to be determined.
2. The role of staff, materials and students in the covering of the gap needs establishing.
3. Materials that are produced need to be accessible to students when doing practical work. Web-based materials meet this requirement admirably for software developers, though consideration needs to be given to installing the site on a local computer where distance to the server is involved.
4. Materials need to be easily updatable as software versions are themselves revised.

5. Intellectual property rights issues need to be properly established and the work should meet the requirements of the Disability Discrimination Act (Madden, 2010).

### Conclusions

A learning gap between theoretical teaching materials in engineering and software vendor support documentation can exist. A strategy that became apparent from a case study project 'The Wavelet Toolbox Guided Learning Handbook' has been developed in order to formulate an approach that may be suitable for this more general learning problem. This strategy is capable of further development to cover any theory-practice gap.

### Acknowledgements

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# **Quality of learning materials, a minimum model for Wikiwijs**

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## **Abstract**

In the Netherlands, Wikiwijs has to be the place where all teachers of the Netherlands, ranging from primary education to higher education, can (co)develop, share, rework and use digital learning materials, published under an open license. Concerning the quality of the learning materials, Wikiwijs does not present a minimum threshold for learning materials from the philosophy that teachers are the best capable of judging the quality of these materials. Therefore, Wikiwijs only offers rating and review possibilities to make quality visible. Since the launch of Wikiwijs, several complaints were made about the quality of the learning materials, ranging from non accessibility caused by dead links, wrong metadata, to bad quality of the content. We therefore decided to define a model to assess a minimal quality of learning resources. This model had to take into account both the philosophy of Wikiwijs (as low a threshold as possible) and the practical application of it (efficient assessment of learning materials should be possible). The model is built up by several requirements, divided into the categories Must have and Nice to have. The model was used by editors during the last months of 2011, leading to some adjustments of the model.

## **Keywords**

Quality of open learning resources, Wikiwijs, community

## **Introduction**

In the Netherlands, Wikiwijs has to be the place where all teachers of the Netherlands, ranging from primary education to higher education, can (co)develop, share, rework and use digital learning materials, published under an open license. Since the launch of the first version of this portal in 2009, several 100,000s learning materials are made available through Wikiwijs. Although Wikiwijs has its own repository, most of the learning materials that can be found through the Wikiwijs search engine resides in collections elsewhere. The metadata of the learning materials in these repositories are harvested and thereby made available to the search engine of Wikiwijs. When a user wants to access these materials, they leave Wikiwijs and enter the repository in which the learning material resides.

Concerning the quality of the learning materials, Wikiwijs does not present a minimum threshold for learning materials from the philosophy that teachers are the best capable of assessing the quality of these materials. An important issue in an open setting like Wikiwijs is the great number of contexts in which the learning materials can be used. This makes it difficult for Wikiwijs, not being part of these contexts, to assess the quality. Instead, Wikiwijs offers rating and review possibilities to users of Wikiwijs to make quality visible.

Since the launch of Wikiwijs, several complaints were made about the quality of the learning materials, ranging from non accessibility caused by dead links, wrong metadata, to bad quality of the content (without specifying what was meant by "quality"). Mid 2011 it was therefore decided to formulate a minimum model for quality to be used by Wikiwijs. This model was used by a number of editors to evaluate learning materials. In this paper the model is presented and the results of the evaluation are described.

## The quality model

The quality model had to meet the following demands

- Applying the model to assess learning materials should be easy and not time consuming
- Contextual requirements will not be part of the model

In this sense, the aim was to define a minimal quality model to have the threshold as low as possible but still describe the aspects of the learning resource that are the source of most of the complaints of the users of Wikiwijs. The model consists of requirements and per requirement an operationalization to be used by the editors to assess whether or not the learning material fulfills the given requirement.

Sources for the requirements were a study to quality requirements for e-learning (Ubachs, 2007), a study to automating OER assessments (Leary et al, 2011), several internal publications from the Open Universiteit and a conversation with the director of Klascement, a platform for sharing learning resources in Belgium. After formulating a first version, the editors (being teachers in primary and secondary education) were asked to comment on it, leading to adjustments to the model.

The requirements are divided into two categories:

- **Must-have.** A learning resource has to comply to all requirements into this category to pass the assessment. Most of the complaints from users of Wikiwijs are about not complying to requirements from this category.
- **Nice to have.** Only those resources that comply to all Must haves are assessed for the requirements in this category. Not complying to one or more of the requirements from this category gives direction to improvement activities for the learning resource. The resource passes the assessments

Table 1 lists the requirements and its operationalizations.

Table 1. Requirements of the quality model

#	Requirement	Operationalization
<b>Category 1: Must have</b>		
1.1	No spelling mistakes	Max 3 spelling mistakes in a sample of 100 words
1.2	Good contrast (in webpages)	Light background with sufficiently dark characters
1.3	Playable on a regular PC or Mac	Not necessary to install extra tools to be able to use the learning resource
1.4	No 404 links	No 404 links in a sample of a maximum of 10 links in the resource. Also when a 404 link is discovered apart from the sample, the resource does not pass the assessment.
1.5	Correct metadata	The values for Context, Title, Description, Costs and Aggregation level should be correct.
1.6	Copyright cleared	The learning resource should not clearly violate copyright laws
1.7	Not outdated	Learning material contains elements that are outdated
<b>Category 2: Nice to have</b>		
2.1	Grammatically correct sentences	A maximum of 5 grammatical mistakes in a sample of 100 words. Spelling mistakes are not taken into account (category 1)
2.2	Correct punctuation	A maximum of 5 punctuation mistakes in a sample of 10 sentences. Only clear mistakes like no period at the end of a sentence or no capital after a period at the start of a new sentence.
2.3	Presence of a table of contents	With large resources, a table of contents is preferable
2.4	Learning goals present	For resources of aggregation level 3 or 4 (course or series of courses) the learning goals should be clear
2.5	Necessary prerequisites present	It is formulated which knowledge and skills is expected to be already mastered by the student when using the resource.
2.6	Original sources are described	When other sources are used in the learning resource, the origin of those sources are described.

Some remarks to these requirements

- The operationalization of requirement 1.3 is not unambiguous. E.g. a learning resource meant for a digital schoolboard can only be viewed on a PC or Mac after installing of a viewer. Some content is especially made for one platform (e.g. a Mac), so editors not using this device could not assess this requirement. Editors using this model have interpreted the operationalization to their own insights.
- After some experimentation with this model, some editors slightly adapted requirement 1.4. A 404 link in a list of sources for background material was not considered severe enough to reject the resource at all.
- Requirement 1.5 assesses the metadata elements where false values have a large impact on the satisfaction of the users.
- Requirement 1.6 only counts for learning resources in the Wikiwijs repository. Having an editors process in place gives the obligation to also check the own repository on copyright infringements (source: a conversation with the director of Klascement).
- Requirement 1.7 is about elements for which being out of date is annoying. Example: using the "florin" currency instead of "euro" in calculus tasks.
- Requirement 2.5 is about the not-so-clear preknowledge. E.g. knowledge about some mathematical subjects when the resource treats a subject of physics in another way than usually is the case.

## Experiences in using the model

In the period of September to December 2011, 7 editors used the model to assess learning resources found in Wikiwijs. When the resource failed the assessment (at least 1 Must have was not met), they gave it a rating of 1 star (the lowest rating possible in Wikiwijs) and notified the author of the resource about their findings so s/he was able to improve the resource. When the resource passed the assessment, it was rated with 3 to 5 stars, depending on the assessment on the Nice to have requirements.

Each editor was expert in a specific subject (e.g. History, Mathematics). Each editor assessed resources of their own field of expertise. Resources were chosen at random. When a resource passed the assessment, they also quickly looked into the content and wrote a review in Wikiwijs with their findings. The editors reported average assessment times per resource from 1 - 2 minutes when not writing a review.

Table 2 gives a result about how the resources performed on the requirements of the Must have category.

Table 2. Results of the editor assessments (N=1548)

#	Requirement	Aantal	%
1.1	No spelling mistakes	1193	77%
1.2	Good contrast	1112	72%
1.3	Playable on regular PC or Mac	1128	73%
1.4	No 404 links	1139	74%
1.5	Copyright cleared	1100	71%
1.6	Not outdated	1146	74%
1.7	Correct metadata	1062	69%

827 learning resources (53%) met all requirements.

## Future plans

Based on this minimal quality model, we will continue to assess learning resources. We will also monitor if adding the reviews and the ratings by the editors will lead to an increase in rating and reviewing by other users. We have noticed a small increase the last period, but it is too early to draw a conclusion about the effect of more ratings and reviews visible on the willingness of other users of Wikiwijs to add their rating or review.

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# **Rapid course development using OCW resources: applying the inverted classroom model in an Electrical Engineering course**

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Paper not submitted

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## **Reuse and repurpose: the life story of an (open) educational resource**

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### **Abstract**

This paper relates the life story of a particular educational resource (and its lead author) that went from being closed to open and which exemplifies the value of reuse and reworking of educational resources in both arenas. It describes how the educational resource was itself a reworking of previous resources and has now been reworked and reused in a number of other settings, both closed and open. It also shows the amplification and networking effects of open educational resources.

### **Keywords**

Open educational resource, reworking, reuse, networking, life story

### **Prologue**

Once upon a time there was a Systems department created in 1972 at The Open University in the UK by the founding Dean of Technology. He was keen that a Technology Faculty should deal with both disciplines of analysis (such as materials, mechanical and electronic engineering) and disciplines of synthesis (design thinking and practice and systems thinking and practice). This Systems department then set about creating a number of undergraduate modules for students to study, but being part of a distance teaching institution this involved embodying much of the teaching within bespoke educational resources such as teaching texts, audio recordings and television broadcasts (Lane and Law, 2011). Now the teaching of systems thinking and practice involves many things but two aspects in particular were not as easy to teach at a distance as others – namely diagramming and group work. So the modules also had an associated residential summer school where students from all over the UK and even further afield would come together for a week of intensive activities that involved hands on diagramming and group work.

Over the years the staff in the Systems department updated or replaced these modules in response to feedback from the many thousands of students who studied them, through using new technologies such as video recorders and personal computers to enhance the teaching and learning process (Bell and Lane 1998), by reflecting developments in the discipline itself and through new ideas brought in by new members of staff, such as the author, who joined the department in 1983. The author also gradually worked his way up to being Head of the Systems department in 1998 whereupon he undertook a review of the systems curriculum and how it was being taught (Lane, 1999). One issue that this review identified was that some basic systems principles and practices were being taught differently across the various modules and since students might be studying a module either as a one off or as part of different degree courses that there needed to be some common educational resources that introduced these basic elements across all the modules. Thus the idea of a set of three study packs dealing with major systems concepts, systems diagramming and systems modelling respectively was proposed and implemented.

### **A study pack is born**

Thus T551 *Systems Thinking and Practice: A Primer* came into being in 1999 as the first of these three study packs that acted as a ‘common’ educational resource to be used across a number of separate modules dealing with systems thinking and practice. The study pack included a number of different items – a teaching text (Lane, 2002), an audiocassette guide to some text material and a CD-ROM of video material. However, as a primer on the subject the learning outcomes of the teaching text and AV material had first been planned and designed by a team of academic staff and then created by the author by re-using educational material



drawn from over 25 years of use and experience on previous modules dealing with systems thinking and practice. Thus T551 was largely a ‘mash-up’ of materials that had been developed and used with students by at least 10 staff members over many years, materials that had been truly tested out as useful, plus new linking or supplementary material. This model of creating modules through teamwork is common in The Open University and a likely feature of the future collaborative development of open educational resources (Lane, 2011) as well as being a ‘within institution’ example of significantly reworking and repurposing existing materials. In fact the whole exercise of module redevelopment, of which T551 was but one part was used as a case study in a book on reusing online resources (Littlejohn, 2003 p 110-111).

### **The study pack grows up: Reuse and repurposing behind closed doors**

As this study pack was used on 3 separate modules for the next few years it was seen and studied by at least 7,000 students (note that a precise figure is hard to determine since the same student may have studied only 1 or all 3 modules).

In addition this study pack was available to buy from The Open University for use by other institutions or by individual learners, with sales having reached nearly 3000 since first being launched. On top of this the ‘host’ modules had also been licensed for use from The Open University by other. A good example of licensed use is by the Arab Open University, an international partner of The Open University, which has incorporated a version of a parent module to the T551 study pack, T205 *Systems Thinking: Principles and Practice* into a Business Studies degree and so has also used T551<sup>23</sup> with a few thousand students.

However, this was not the only ‘closed’ reuse of this reworked and repurposed educational resource. It was also used on an internal Open University staff development programme on problem solving called PERSYST<sup>24</sup> and so has been used by several hundred Open University staff over a number of years.

### **The study pack leaves home: how it has fared in an open world**

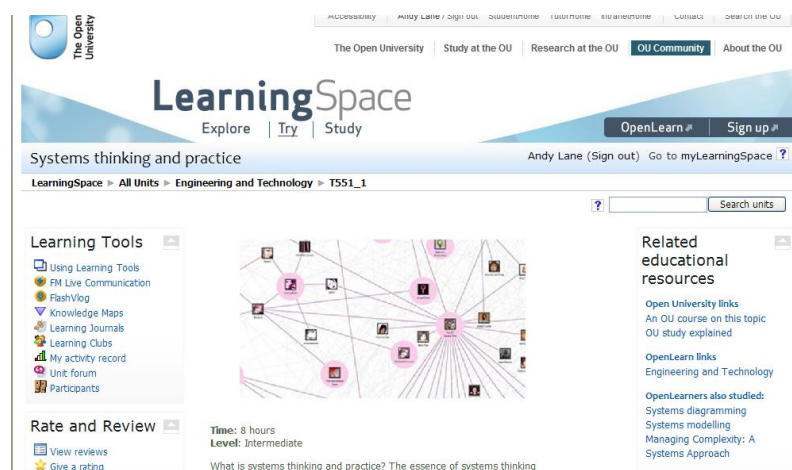
When the author became the founding Director of OpenLearn at The Open University in 2006 he chose part of T551, following the principles covered in Lane et al. (2009), as being suitable for open publishing under a Creative Commons license in 2007 (see Figure 1 and <http://openlearn.open.ac.uk/course/view.php?id=1289>). Since being published on OpenLearn’s LearningSpace this open educational resource has been regularly viewed in situ by 32,329 unique visitors as of January 2012 (in comparison, from 1 December 2011 to 8 January 2012 this figure was 4100 unique visitors, indicative of the fact that monthly visits have grown since the early days and a figure which also placed T551\_1 as the 76<sup>th</sup> most popular study unit of 645 study units in total that were available that month).

Figure 1 a screenshot of the front page of the OpenLearn study unit

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<sup>23</sup> See [http://e-class.ws/T205A\\_syllabus.pdf](http://e-class.ws/T205A_syllabus.pdf)

<sup>24</sup> See <http://pharos.blogs.com/files/armson.pdf>



As well as viewings by browsing visitors the study unit has been downloaded in a variety of formats (Table 1) as well as being rated and reviewed by 13 and 11 users respectively on the site itself (with a rating of 5 stars and 45% being very satisfied with it and 91% finding it very interesting).

Table 1 The number of downloads since publication by format type for the OpenLearn Study Unit T551\_1 Systems Thinking and Practice<sup>25</sup>

<i>Download format</i>	<i>Number of downloads</i>
Unit Content XML	80
Unit Content RSS	1147
Print	330
Common Cartridge	169
Content Package	66
Moodle Backup	80
Plain Zip	217
OXML	18
SCORM	31
Epub	32
Word document	90
MP3	0

What is striking about the figures in Table 1 though is the relatively high download rate compared to the viewing rate and raises questions of what people are using those downloaded versions for.

However a feature of such openness in the way the open educational resource can be taken away is that it is very difficult to discover why and how these people might be viewing and/or downloading this study unit or what they think of it. One way to check is if it appears or is mentioned on another website which can be picked up by web searches. Nevertheless most mentions of the study pack on the web appear to come in referral sites such as the **learningexchange**<sup>26</sup> or the systems wiki<sup>27</sup> or learning for sustainability<sup>28</sup>. But the author has found one example where T551 has also been reviewed and accepted as well as referred to. This is on the Temoa website run by the Tecnologico de Monterrey in Mexico in 2008, where a member of staff decided to submit it for inclusion and review and subsequently the study

<sup>25</sup> NB Not all formats have been available for this whole period with the last 3 only available since mid 2011.

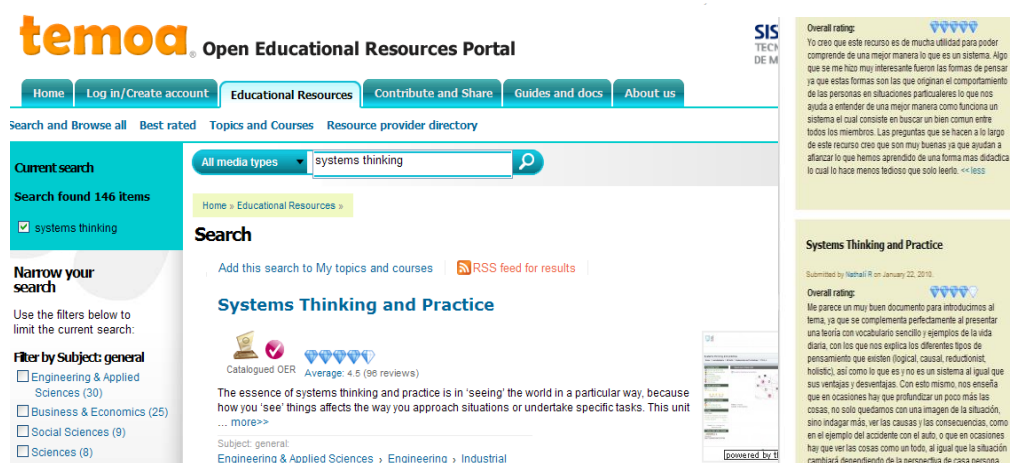
<sup>26</sup> See <http://lx.iriss.org.uk/content/systems-thinking-and-practice>

<sup>27</sup> See [http://www.systemswiki.org/index.php?title=Systems\\_Thinking](http://www.systemswiki.org/index.php?title=Systems_Thinking)

<sup>28</sup> See [http://learningforsustainability.net/social\\_learning/systems\\_thinking.php](http://learningforsustainability.net/social_learning/systems_thinking.php)

unit has now seemingly been incorporated ‘as-is’ into 3 courses they offer (see Figure 2). And as part of that exercise there have been 96 reviews of it in Spanish (one of the highest number of reviews on the site with an overall rating of 4.5, which is also one of the highest ratings of open educational resources on the site).

Figure 2 Screenshots from the [www.temoa.info](http://www.temoa.info) website showing the overall rating and some individual reviews of Systems Thinking and Practice



## Epilogue

An academic author is always pleased to see how well their educational materials are rated and how much they are used by others. In the case of this resource it can be seen that it was already the product of reuse, reworking and repurposing even when it was a closed resource, albeit at a University which teaches and reaches larger student audiences than most. However by making it open the resource is now being seen and valued by even more people all around the world who are hopefully reusing, reworking and repurposing it for new situations and contexts through diffusion and adoption processes (Van Dorp and Lane, 2011). Through this openness the open educational resource is providing new connections and networks between the creators and users (Lane, McAndrew and Santos, 2009) that they may want to exploit in some way in future collaboratively or collectively (Lane, 2011). This process can also extend the life of good educational resources with some of the material in T551 dating back to the 1970s. So everyone is living openly ever after.

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## **Specific features of development and use of innovation training programs in art and architecture at Open CourseWare**

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The concepts from the UIA-UNESCO Charter for architectural education and the mission of Moscow Architecture Institute (MArKhI) have launched publications of the Open CourseWare in architecture. Development of social ties between architectural education and society targeted at improvement of specialists' training and spread of professional knowledge is aimed at involving the civil society representatives in making decisions about transformations of spatial environment. Spread of knowledge has various forms both conventional like organization of training projects shows, public lectures of professors, Welcome Days for school leavers, etc., and the novel ones that appeared thanks to computerization of education, e-learning, development of multimedia materials. [1, 2].

Development of new educational forms - the Open CourseWare (OCW) - was initiated by management of bodies that provide additional training for school leavers and are eager to familiarize as many talented teenagers as possible with requirements for examination papers, to attract them to become MArKhI students.

Traditionally training programs for university applicants have been very important. Over 100 years ago an examination in drawing [3] was first included in the list of entrance examinations of the architecture department of Moscow architecture school. In Russia of the turn of the 20th century with its 90% illiteracy a skill of drawing manifested artistic abilities and a relatively good education.

Cancellation of entrance examinations adopted in the 1920s was explained by a wish to make architectural education available for workers and peasants. Absence of knowledge or poor knowledge and cancellation of compulsory entrance examinations negatively affected further training because the training program had to be expanded to fill in the blanks in the education. A wish to keep utmost openness and accessibility of education resulted in development of new methods of professional architectural education successfully worked out by the teachers and the management of the world-famous VKhUTEMAS (The Russian state technical and art school).

The method of a structural drawing resulted from a search for new "scientific methods in art training" and a solution of a problem of showing structures in a drawing. The methods are very specific and differ from a classical artistic drawing that is why all those who wish to enter MArKhI have to be specially trained. More variable possibilities for obtaining the required training increase chances to enter the school for all those who are eager to become architects.

MArKhI is a home of the Russian education and methods association (REMA) of architectural specialties. This is a basis of MArKhI special mission. REMA coordinates training programs of professional education standards, organizes tutorial workshops of university teachers, and examines materials dealing in appraisal and dissemination of new professional knowledge [4].

The OCW website appeared thanks to an architectural activity of different social groups that comprise the modern society, administration officers, public organizations, project customers, citizens, etc. Open education implies a possibility to find a common language and to adopt

collective solution, elimination of potential social conflicts that errors in public space transformation projects could cause by obtaining fundamentals of professional knowledge. We studied experience of foreign universities and analyzed goals set by the organizations - OCW Consortium members [5] to evaluate expedience of establishing the OCW in architecture. Three groups of motives were determined in accordance to which Universities of different countries published their OCW joining the OCW Consortium.

Universities in the Young Democracy countries like, for example, the South African Institute for Distance Education, Korean University for Open Education and Open Education University of SAR, publish educational resources in Internet to develop democratic foundations of the state, building a just and democratic society in which conditions for the nation's self-education are created.

The countries that have vast territorial resources and are in need of mass demand of improving the education level of their citizens use the Internet communicative function to achieve and to disseminate knowledge with high speed among big number of the citizens on a big territory. OCW publications promote improvement of the country's economy in general and development of individual professional careers. Universities claiming leadership in national education unite in the State digital resource centers like African Virtual University, China Open Resources for Education (CORE), Indian Institute of Management [8,9,10] and publish OCW in national languages.

Universities in economically developed countries use OCW as a form of organizing a virtual professional socium that promotes development of interdisciplinary research of students, post graduates and scientists.

The three motives of publishing OCW in foreign universities are relevant for Russia and can be implemented with the support of Open Course Ware in architecture.

Establishment of Russian-language OCW in architecture was accompanied by a search for an economic mechanism that could render support and development. In our case investments necessary for publication of OCW cannot be received from private and state resources as is the usual practice for foreign universities. Publication of "secondary" use resources approved in BA and MA training was neither feasible because of the poor computerization of the mainstream architecture education. Primary digital resources in principal programs of BA and MA education in architecture and design do not exist because methods of Russian professional architecture education are based on personal intercommunication of teachers and students.

The poor computerization of Russian architectural education also results from low efficiency of investments required for the works and would not be justified due to a small number of specialists who work in architecture. (Table 1) [6].

*Table 1. Number of architects per 100 000 thousand citizens in different countries.*

Japan	Italy	Germany	France	United Kingdom	USA	Russia
230	145	132	118	52	40	4

In 2009 a possibility to establish Russian-language OCW in architecture appeared when Moscow government allocated a budget for development of professional education innovation programs. For OCW publication the priority guidelines that experts considered most vital and topical were determined. Also the structure of OCW publication was developed.

Priority publications included innovation programs of post-graduate professional education and training programs for school leavers – pre-university education. Majority of programs were already used in the training process in primary and secondary education at MArKhI but did not have digital environment. In this regard the first stage of establishing MArKhI OCW included digitizing methodical materials, their preparation for publication in OCW in accordance with OCW Consortium requirements. In total 10 courses of pre-university education and six courses of post-graduate education were published; and though the efficiency of OCW had not been proved by the time a decision was taken to continue publications.

Another stage in developing the OCW in architecture included market studies (2010). Studies of socio-economic forecasts from city target-oriented programs of Moscow government helped to identify promising aspects of architecture. Implementation of the programs in the near 5-7 years will demand more architects with innovation professional skills in the highlighted aspects. Those aspects became the basis for innovation programs that were later published on the internet site of the OCW. Further plans envisage organization of full-time training using the developed programs via the qualifications upgrade system of MArKhI.<sup>29</sup>

The process of establishing the OCW in architecture promoted a search of innovative directions of the additional architectural education. New communicative opportunities of the internet and OCW helped to find new target groups of people potentially interested in getting architectural education.

One of the groups features secondary school teachers. Before interaction between secondary schools and higher educational institutions was supported by the government and used to be a prerequisite of existence of the continuous dedication system. Recently due to introduction of the Uniform state exam the connections were lost and the interaction got weaker supported only by individual initiatives between school teachers and university teachers. A study of tasks set for secondary school teachers today and the principles of assignment approach in education provided development of programs of school teachers professional skills upgrade in architecture. Thus a new feature appeared on the OCW site – “For the teachers”. The training programs of the feature contain primary resources.

To the educational designers’ regret a study of internet statistics and accesses from “feedback” revealed that innovation materials in the OCW programs in spite of their good quality and novelty did not interest teachers. The situation changed in 2011 when it became possible to organize full-time training of teachers of a program from “Art of structures”. When methodical materials from the OCW started to be used in the program of full-time education as a methods fund providing preparation for lectures the traffic rate on MArKhI OCW during the teachers’ training period increased threefold. At that both compulsory and supplementary programs were popular.

Teachers preferred to use specially selected OCW methodical materials and not spend time on looking for necessary information in libraries.

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<sup>29</sup> По ряду причин эти планы не были реализованы

The same idea of using methodical materials published on OCW in architecture for full-time education of teachers proved feasible in full-time training of school-leavers. The OCW methods fund promoted a cost reduction of school leavers training by putting down paper materials printout.

The internet statistics of the MArKhI OCW site demonstrates a growth of visitors' number on OCW used in full-time training of teachers and school leavers: time and number of visited pages grow. This testifies to an increasing interest in different materials placed on the OCW site beside the available methods resources.

In 2011 the site structure in the "Other" feature initially designated as a reserve for publication of innovative programs of additional architectural education, was added with programs that were not targeted at specific social groups. Art and culture components of the professional education content became a prerequisite of publishing programs in this feature. Currently their potential is not fully used. Humanistic traditions of Russian education and art patronage [7,8] testify to a big potential for development of additional architectural education in art and culture and its use in solving important social tasks. In the artistic life of modern Russia we see examples of coexistence of non-formal associations of artists, architects who work together with the urban and rural population creating new spatial artistic works [9].

Signs of contemporary life feature organization of street art performances, festivals that bring together artists and local citizens and are supported by sponsors and mass media. Thus the society expresses its readiness both to accept results of work by specialists in artistic transformation of space (architectural environment design) and also to be co-creators.

Artistic means were used at launching work on innovation aspects while developing art-therapeutic programs known as "Art-therapy". Applying different programs of architectural education the authors of new programs used components with a positive emotional background. The scientific-methodical research results were used as a basis for programs "A gifted child" and "Creative life" that were developed and published on OCW. Just like the previously published innovation programs they did not have counterparts in other forms of education and were published as primary digital resources.

By publishing innovation programs on MArKhI OCW site their authors aimed at promoting their innovation works, preparing them for introduction into the system of additional and extra-mural education and getting professional and social evaluation.

Ideas of the OCW education and development of OCW in architecture shall be developed with regard to the following factors:

- OCW programs and ideas are innovative; their social importance demand propagation and promotion both among educational professional institutions and other social groups;
- Economic basis of OCW in architecture existence asks for further specification and estimation; digital educational content and cooperation between OCW and traditional education shall be legally protected;
- It is necessary to develop an HR potential of architecture schools, skills to work with information environment and use it for teaching students and other social groups.

Though quite young the OCW in architecture already demonstrates a positive effect that is explained by a principally new approach to education. An open exchange of knowledge, communication between different social groups within an open content stimulates searches of new directions in the work of teachers and scientists in architecture higher educational institutions.



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## **The OERtest Clearinghouse**

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### **Abstract**

One of the aims of the OERtest project is to test the feasibility of assessing learning exclusively achieved through the use of Open Educational Resources. Among other tasks, OERtest seeks the establishment of a European OER Clearinghouse that, through a single portal, allows the access to OER course materials located in the local repositories of the universities. There are many OER course repositories available but most of them are incomplete in terms of description, competences and assessment methods. To build a single portal to access the courses we need to find a common structure and formalize them in to be valid in a formal certification framework. University of Granada, one of the OERtest partners, has a specific case of repository indexed by the Clearinghouse. Following the OpenCourseWare initiative, the OCW-UGR repository hosted in Universia, an institution that groups Spanish American institutions within a university network, uses the EduCommons metadata schema for OCW Repositories. We show some course statistics, descriptions and standards applied to the metadata of the OCW-UGR courses.

### **Keywords**

OER, OCW, Metadata Schema.

### **Introducing the OERtest Project**

Since the establishment of the European Higher Education Area, European Universities have expanded their activities within different areas of collaboration and cooperation around course provision and joint degrees. According to (Miller, 2011) the opportunity for faculty members and institutions to openly share content beyond traditional institutional boundaries has also grown into an international movement. This movement is not isolated, as we also see how the open access movement has gained increasing traction within universities, leading to the creation of numerous open educational resources (OER) repositories. These kinds of courseware repositories are offered to all learners worldwide through the use of internet, offering self-guided learning and sharing possibilities to teachers (Standford, 2010; MITx, 2011).

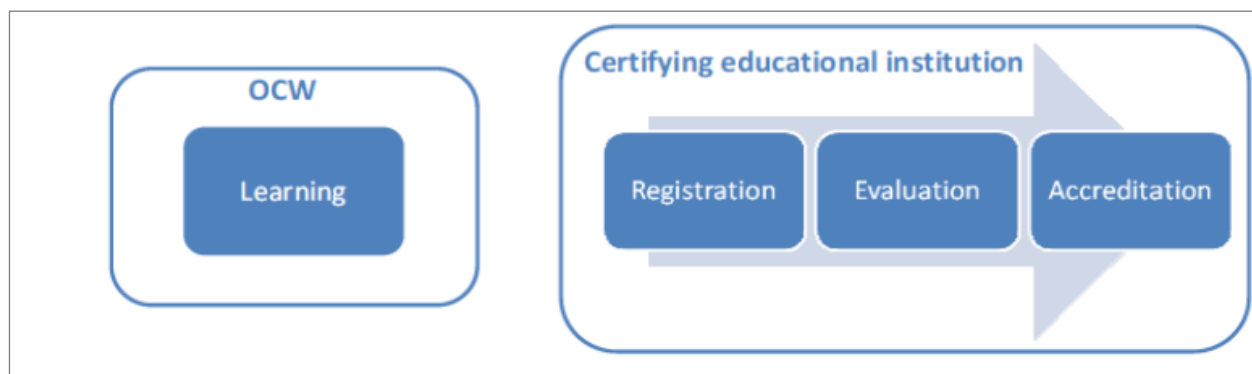
The recognition of OER-based learning and its feasibility within European Higher Education institutions are the main objectives of the OERtest project (OERtest, 2010), a two-year initiative funded by the European Commission (EACEA, 2010), with participant institutions<sup>30</sup> from across Europe.

In the OERtest project, we focus on opening up possibilities for assessment of resources, as a natural complement to the materials which are being made available. Mainly we move to the possibility of universities publishing courses as OER and also certifying students, maybe

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<sup>30</sup> University of Granada, Sciento, Catalonia Open University, University of Edinburgh, University of Bologna, the United Nations University, the European Foundation for Quality in E-Learning and the University of Duisburg-Essen.

awarding ECTS. This posed two main areas of testing and development as we shown in the following image. The learning framework is concerned with entire course-modules offered as OER with full course materials, guides, supporting documentation etc., equivalent to a unit/module offered in any HEI. The certifying framework assumes the possibility of unbundled course design, assessment & certification possibilities, and accumulation & recognition procedures, both within an institution and between institutions participating in a consortium.



In this paper we focus on the characteristics of the Clearinghouse a meta-aggregator system that links existing institutional repositories with the desired elements for a OER-courses.

### Other initiatives

Every institution interested in disseminating their learning production and providing this kind of service uses a learning object platform. The most extended alternative is the open source alternative (MOODLE), but there are other commercial proposals (BLACKBOARD, EQUELLA) or even ad-hoc solutions designed and implemented within the institutions. This diversity is indeed good for users because experts are spread by different institutions and so it is their knowledge. In our opinion, the effort dedicated by institutions in providing open contents is huge, so replication of a centralized service is not an option but to re-use the original contents provided.

OpenCourseWare (OCW) is a large-scale electronic publishing initiative funded by the Massachusetts Institute of Technology (MIT) with the William and Flora Hewlett Foundation and the Andrew W. Mellon Foundation. The University of Granada is present with its own OCW site in Universia, an institution that groups Spanish American institutions within a university network, inside of a project in coordination with OCW-MIT Consortium. The initiative aims to provide free, simple and coherent access to course material for teaching staff in the not-for-profit sector, students and self-educators all around the world (UNIVERSIA, 2012).

The OCW-UGR site has 16 courses classified by six categories (Arte y Humanidades, Ciencias, Ciencias de la Salud, Ciencias Sociales y jurídicas, Arquitectura e Ingeniería y TIC). The categories are similar to the OCW Consortium Categories (OCWC, 2012) but they have been adapted to the reality of the courses from University of Granada. The course structure follows the MIT-OCW structure items as well (syllabus, calendar, readings, lecture notes, labs, assignments, exams, study materials, image gallery, project video, projects, discussion group, class trip, related resources) but all of them aren't mandatory because the course teacher decide how to design their own courses. Some teachers prefer develop the syllabus concept while less of them choose the calendar (or a temporal distribution) for publishing their readings and assignments. The course content format are heterogeneous and the OCW site visitors can access to information in doc/pdf, video, podcast, html and SCORM format are

present in the site. About the access statistics the visit average to the main site is near of 10000 each month with a record of more than 20000 visits last year.

For providing a mechanism to index the content of the OCW site there is a RSS feed with an item for each course. In addition, the courses have associated metadata that describe their content. The metadata schema chosen is the same that EduCommons OCW sites use for their courses (EduCommons. 2012).

Table 1. OCW Course Metadata Set.

Dublin Core Metadata Element Type	Dublin Core Metadata Element Name
Non-qualified Dublin Core	Title
Non-qualified Dublin Core	Creator
Non-qualified Dublin Core	Subject
Non-qualified Dublin Core	Description
Non-qualified Dublin Core	Publisher
Non-qualified Dublin Core	Contributor
Non-qualified Dublin Core	Date
Qualified Dublin Core	Created
Qualified Dublin Core	Issued
Qualified Dublin Core	Modified
Non-qualified Dublin Core	Type
Non-qualified Dublin Core	Format
Non-qualified Dublin Core	Identifier
Non-qualified Dublin Core	Source
Non-qualified Dublin Core	Language
Non-qualified Dublin Core	Relation
Qualified Dublin Core	Is Part Of
Non-qualified Dublin Core	Coverage
Non-qualified Dublin Core	Rights
Qualified Dublin Core	License
Qualified Dublin Core	Rights Holder

### Design Principles for the Clearinghouse

The OERtest project's guidelines for assessment of OER:

- \* are concerned with entire course-modules offered as OER – the OER must be an entire course unit/module<sup>31</sup>, with full course materials, guides, supporting documentation etc., equivalent to a unit/module offered in any HEI.
- are intended primarily for units which have been made available online, primarily for self-study, and not necessarily tutor-supported
- assume the possibility of unbundling course design, teaching and assessment, both within an institution and between institutions

Current meta-data schemes, as applied to OCW, do not provide for (a) information about the completeness of the resource for self-study, (b) information about quality checks performed on the resource and (c) information about the possibilities for obtaining certification verifying completed learning.

Based on these observations, the OERtest Clearinghouse will create a directory of learning resources (hosting only meta-data, and linking to content in existing OCW repositories), where each resource is defined in line with the features outlined above (classified as Type: Collection in line with Dublin Core terminology). The classification terminology will use the

<sup>31</sup> This also means that the guidelines require an education system based on a system of credits to be properly applied.

Dublin Core, as its basis, mandating certain vocabulary restrictions to existing elements in the following cases, so as to enable its usage scenario:

<b>Term Name: Description</b>	
Label:	Description
Definition:	An Account of the Resource
Comment:	Description may include but is not limited to: an abstract, a table of contents, a graphical representation, or a free-text account of the resource. <i>In particular, it should contain a description of the learning outcomes of the resource in question.</i>
Type of Term:	Property
Refines:	<a href="http://purl.org/dc/elements/1.1/description">http://purl.org/dc/elements/1.1/description</a>

<b>Term Name: Rights</b>	
Label:	Rights
Definition:	Information about rights held in and over the resource.
Comment:	Typically, rights information includes a statement about various property rights associated with the resource, including intellectual property rights. <i>In particular, it should contain a clear statement as to permissions for re-use, and any limitations in its use as part of a certification process (including where such process is commercial in nature)</i>
Type of Term:	Property
Refines:	<a href="http://purl.org/dc/elements/1.1/rights">http://purl.org/dc/elements/1.1/rights</a>

<b>Term Name: Publisher</b>	
Label:	Publisher
Definition:	An entity responsible for making the resource available.
Comment:	Examples of a Publisher include a person, an organization, or a service. <i>Where the publisher has been authorised to publish by as a course module by another body, e.g. an accreditation agency this should also be indicated using the format &lt;NAMEOFPUBLISHER&gt; (As certified by &lt;NAME OF AUTHORISING ENTITY&gt;)</i>
Type of Term:	Property
Refines:	<a href="http://purl.org/dc/elements/1.1/publisher">http://purl.org/dc/elements/1.1/publisher</a>

<b>Term Name: Audience</b>	
Label:	Audience
Definition:	A class of entity for whom the resource is intended or useful.
Has Range:	<a href="http://purl.org/dc/terms/AgentClass">http://purl.org/dc/terms/AgentClass</a>
Comment:	<i>The definition of AgentClass should be qualified in terms of different types of certification options, e.g. "students seeking certification via recognition of prior learning", "students seeking certification from providing institution", "students seeking certification from allied institution", "students seeking certification from other institution".<sup>32</sup></i>
Type of Term:	Property

The Clearinghouse will work through manual submission of individual resources by participating institutions, whose submissions will be quality controlled for completeness and coherence before being published. Records in the clearinghouse will in turn be exportable in

<sup>32</sup> The consortium is currently looking into options for standardising the number of possible interpretations of AgentClass linked to this type of definition.

standard xml formats. The intra-course level metadata could be provided within the SCORMS with LOM (Learning Object Metadata) format given that mapping to unqualified Dublin Core Metadata Element Set used for course level is already defined (IEEE, 2002:44).

### **Discussion and Conclusions**

The approach taken by the consortium is to link certifiability of learning resources to the standard meta-data description of such records, as described by the record publisher. The main limitation to such approach is that the licensing options of many such resources will allow for a variety of usage scenarios including those not necessarily intended by the resource publisher. Thus, from a learning-resource consumption scenario, the merits of a database of institutions offering certification of open learning resources, classified by type of certification offered, and types of learning resources certified merits further discussion and investigation.

We conclude by calling for wider participation and input into the creation of a standard for certification. Through this pilot, we investigate one of the options whereby this may be enacted. Through the creation of an OER-Europe network, we plan to offer a forum whereby repository manager, institutions and regulatory bodies can come together, and further refine and specify the work started. Finally, the pilot standard has been enacted as a live repository within the OERtest project. We encourage readers to interact with the platform and use it for dissemination of their certifiable resources.

### **Acknowledgment**

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## **The PARiS Project: Mobile Learning**

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### **Abstract**

Mobile Xerte is a new addition to the award-winning Xerte Project's suite of tools for Android and iOS devices. Mobile Xerte is built around the concept of 'learning spaces', or collections of open resources that can be subscribed to using the application. Learning spaces can also be created using Mobile Xerte, and shared with other users, allowing content to be readily adapted and re-purposed amongst peers, or between teachers and their learners. The application has native support for a subset of content authored using Xerte Online Toolkits, and is open source software, released under the GPL.

The JISC funded PARiS Project provides an ideal opportunity to explore how mobile devices might support tutors' teaching and students' learning experiences, and the research and development in this area will inform technology developments as the variety of devices learners use widens. In particular, the project team are interested in discovering how students want to use mobile technology in their studies, and are exploring two angles: the device providing access to learning materials, and the device providing support for the students' learning.

Several use cases have been identified by the project. The simplest is a tutor creating a set of resources for consumption in Mobile Xerte to support students' learning throughout a module or course. The content itself can be developed using Xerte Online Toolkits and the Learning Space is made available to students who subscribe to it using Mobile Xerte and consume the content on a phone or tablet. Learning Spaces can also include existing web-based resources suitable for delivery to a mobile device. Subscription to the content can be facilitated via a URL or a QR Code, and students can easily share this content with other users of the application. This use case will be the most familiar.

In the PARiS project we are exploring how learning materials can be created and presented by working in conjunction with a tutor from the School of Geography who is designing a ten credit module on Sustainability from a geographical perspective. A support resource will be built in Xerte Online Toolkits and will include a week by week breakdown of the module, providing access to a number of resources relating to each week such as: reading lists, activities, lecture topics, key questions, videos, assessment guidelines, and more.

The resource will be made available as a Learning Space in Mobile Xerte and Nottingham students enrolled on the module will be directed to subscribe to the Learning Space as part of the module introduction. Open learners who access the module through the U-Now website, will also be able to subscribe to the Learning Space through that route. A twitter #tag will be set up for this resource and the corresponding twitter feed will be made available as part of the Learning Space, providing an opportunity for the resource to evolve over time, and creating a social space in which tutors can communicate with students and students can communicate with each other about the OER.

A second use case allows Learning Spaces to be created and shared using just the mobile device by users of the application. A Learning Space – a collection of resources – is assembled using Mobile Xerte and shared directly from the phone using the network to push the underlying data onto a web server from where it can be subscribed to, and consumed by others. Learning Spaces can be adapted and re-shared by users, allowing content to be easily re-assembled, embellished and re-contextualized by the learners themselves. In this use case,



the divide between the user as a teacher and the user as a learner is significantly blurred. Here we are interested in whether students want to be active creators of content that they subsequently share with their peers.

The PARiS Project is using this approach to share the third party OER that has been collected as part of the design process. At the core of PARiS is the requirement to collect third party OER and incorporate it into the resources that are being created. This building block approach will help assess whether cost efficiencies can be realized through re-use and provide valuable data on the benefits and barriers to including third party content. To enhance this aspect of the project playlists of OER content for each module will be created and made available in Mobile Xerte. The playlists will include all of the individual third party OER resources that have been collected as part of the module design. Users will. In addition to module level playlists, there will be an option for users to subscribe a project level playlist, which will provide access to all of the third party OER collected in one location.

Furthermore, as Learning Spaces are created and shared, a highly useful collection of data about collections of OER is assembled, creating interesting opportunities for the capture of data about the learning resources, such as user ratings, related resources, user comments, and to produce new opportunities to re-surface the learning resources in novel and interesting ways. Possibilities to integrate the application with existing collections of OER such as the Xpert repository are being pursued, enhancing the user's ability to find and re-use resources.

**Keywords**

mobile learning, mobile apps, mobile xerte, PARiS, sharing resources, open, open-source, student centered, student generated content,

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# **The UNESCO/Commonwealth of Learning OER Knowledge Cloud**

Rory McGreal

Paper not submitted

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# transLectures: Transcription and Translation of Video Lectures

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## Abstract

**transLectures** is a FP7 project aimed at developing innovative, cost-effective solutions to produce accurate transcriptions and translations in large repositories of video lectures. This paper describes user requirements, first integration steps and evaluation plans at transLectures case studies, *VideoLectures.NET* and *poliMedia*.

## 1. Introduction

Online educational repositories of video lectures are rapidly growing on the basis of increasingly available and standardised infrastructure. Also, transcription and translation of video lectures is needed to make accessible those repositories to speakers of different languages and to people with disabilities. However most lectures are neither transcribed nor translated because of the lack of efficient solutions to obtain them at a reasonable level of accuracy and cost.

**transLectures** ([translectures.eu](http://translectures.eu)) is a FP7 project aimed at developing innovative, cost-effective solutions to produce accurate transcriptions and translations. Our starting hypothesis is that there is only a relatively small gap for the current technology on automatic speech recognition and machine translation to achieve accurate enough results in the kind of audio-visual object collections we are considering; and that this gap can be closed by using *massive adaptation* and *intelligent interaction with users*.

We will first test our tools in two repositories: *VideoLectures.NET* and a smaller repository of Spanish video lectures, *poliMedia*. For transcription, we consider English and Slovenian in *VideoLectures.NET*, which account for more than 90% of lectures, and Spanish in *poliMedia*. For translation, we consider the language pairs: en $\leftrightarrow$ es, en $\leftrightarrow$ sl, en $\rightarrow$ fr and en $\rightarrow$ de.

Although **transLectures** is still in its first year, its case studies have already defined user requirements at different levels; they have already taken first integration steps, and also established evaluation plans. In this paper, after a description of *VideoLectures.NET* and *poliMedia* in Section 2, user requirements are described in Sections 3 and 4 (at a technical level, and at the level of use scenarios, respectively), Opencast Matterhorn integration and first project results in Sections 5 and 6, and evaluation plans in Section 7.

## 2. Case Studies

### 2.1 VideoLectures.net

*VideoLectures.NET* was founded in 2001 as an internally-funded project and is now run by the dedicated Center for Transfer in Information Technologies at the Josef Stefan Institute (JSI), Ljubljana, Slovenia. It is a free and open access repository of video lectures mostly filmed by people from JSI at major conferences, summer schools, workshops and science promotional events from many fields of Science. Indeed, *VideoLectures.NET* is being used as an educational platform for several EU funded research projects; different open educational resources organisations such as The OpenCourseWare Consortium, MIT OpenCourseWare and Open Yale Courses; as well as other scientific institutions like CERN. In this way,

*VideoLectures.NET* collects high quality educational content which is recorded with also high-quality, homogeneous standards.

There are more than 10000 unique users visiting *VideoLectures.NET* every day, with more than 15.000 registered users. All content in *VideoLectures.NET* falls under Creative Commons 3.0 license. In addition, for more than 70% of the content, *VideoLectures.NET* holds the written and signed consent of authors to reuse materials.

## 2.2. poliMedia

poliMedia is a recent, innovative service for creation and distribution of multimedia educational content at the Universitat Politècnica de València (UPV). It is mainly designed for UPV professors to record courses on video blocks lasting 10 minutes at most. It serves more than 36000 students and 2800 professors and researchers. Started only 4 years ago, it is being exported to several universities in Spain and America for free.

As in *VideoLectures.NET*, video blocks are accompanied with time-aligned slides though, in contrast to *VideoLectures.NET*, video recordings are carried out at specialised studios under controlled conditions to ensure maximum recording quality and homogeneity. Indeed, professors are filmed against a constant-colour background to postproduce presentations in which only the professor's body is shown, properly scaled, together with slides. As of June 2011, poliMedia catalogue included more than 5700 videos accounting for more than 1000 hours.

## 3. Technical requirements

At a technical level, **transLectures** tools will satisfy five basic requirements at least:

1. *Accuracy estimation for each transcription and translation*: Clearly, our main requirement is that project tools need to be as much accurate as possible. However, as it is unrealistic to produce highly accurate transcriptions and translations for every video lecture, **transLectures** tools should provide a global estimation of the accuracy of each transcription and translation. This can be done using confidence measures (Ueffing and Ney, 2007; Sanchis et al., 2007; Wessel, 2001). In this way, case studies will define an accuracy threshold to be reached for a transcription or translation to be delivered to the user.
2. *Adjustable computational behaviour*: Project tools for massive adaptation and intelligent interaction may be highly demanding in terms of computational cost. However, case studies computational resources are limited, and thus tools have to be efficient and adjustable in terms of computational behaviour.
3. *Output constrained to user preferences and corrections*: User interaction imposes additional technical requirements, since the system should be able to constrain output in accordance with user preferences and corrections. The user may decide to partially supervise a transcription or translation by entering sequences of words that should appear in the final translation. Then, the system should be able to propose the best translation taking into account these users' constraints.
4. *Fast learning from user corrections*: User corrections on transcriptions and translations need to be immediately incorporated into the underlying statistical models. To this purpose, incremental and on-line training techniques are explored to provide the best user experience and flexibility, since users can directly observe how their corrections are propagated to later suggested translations.
5. *User accessibility*: User accessibility is a must in **transLectures**, so pilot systems will be deployed in HTML5. Pilot systems are basically video players with special subtitling and multilingual functionality.

## 4. User roles

At the level of use scenarios, **transLectures** tools will consider five user roles:

1. **Viewer:** A viewer is just a user looking at a particular translation or translation. So she will have a simple set of features, allowing her to view a synchronized subtitles track if the confidence level of that video is above the level set by the editor or the author. The player should allow a user to become collaborative user.
2. **Collaborative viewer:** Users with that role will have access to an advanced set of features from the transLectures engine; for them the interface will provide a confidence level for the overall transcription/translation, and also will provide alternate translations for difficult parts. The confidence level required to display a translation for a collaborative user will be much lower than the required for a standard viewer. It is expected that collaborative users can be asked through the interface for simple tasks, like transcribing some parts of the video. Input from collaborative users will add information to the translation, but will not replace the content, and will not trigger an update on the acoustic model.
3. **Expert (e.g. professional translators):** An expert is a collaborative viewer with expertise in that field. So, experts can replace transcriptions and translations in parts of the video. Also an input from an expert will trigger an adjustment on the acoustic model.
4. **Author:** An author is the owner of a video, and will be always taken as an expert for his uploads. Also he can decide if subtitles can be displayed by viewers, based on the average confidence level.
5. **Editor:** An editor can set a confidence level for a whole site.

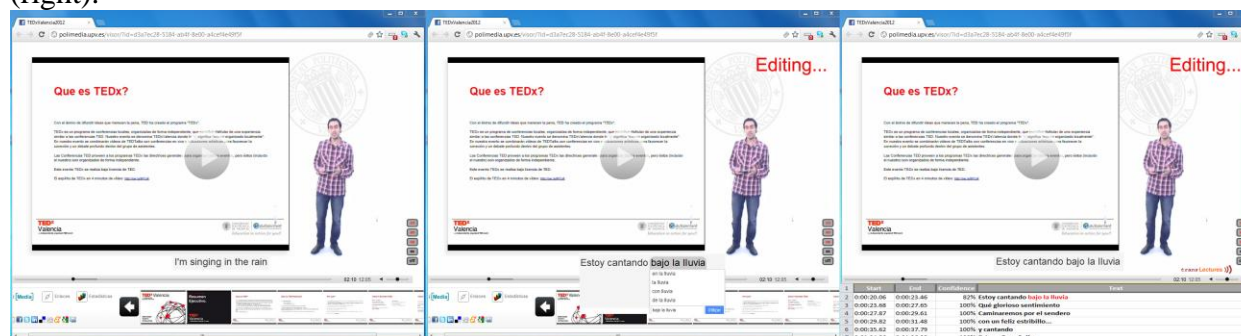
## 5. Integration into Opencast Matterhorn

Matterhorn is a free, open-source platform to support the management of educational audio and video content. Institutions use Matterhorn to generate lecture recordings, manage existing video, serve designated distribution channels, and provide user interfaces to engage students with educational videos. The Opencast Community and its Matterhorn project will provide the scientific expertise, organisational capacity, and primary international channel to develop, deploy, and test **transLectures** tools in both controlled and open settings so as to enable real-life evaluation. Moreover, Matterhorn provides a framework of services around the management of academic video that institutions can customise to meet their individual needs.

## 6. First project results

First project results include about 800 lectures transcribed and preliminary integration steps of translectures into poliMedia for several users' profiles.

In Figure 1, a poliMedia player with transLectures integration is shown for three user roles: viewer (left), collaborative viewer (middle) and author (right). In all cases, languages with available transcriptions/translations are indicated together with a colour code for their quality. Figure 1. transLectures player for viewer (left), collaborative viewer (middle) and author (right).



In the case of a collaborative viewer, the player allows to select alternative transcriptions/translations by clicking on the text. Corrections from collaborative viewers will

be submitted to the transLectures engine to update current transcriptions/translations and improve underlying statistical models. Finally, in the author case, any part of the text can be selected and corrected if needed. It is worth noting that the author also has tooltips associated with difficult parts (in red).

## 7. Evaluation

Internal and external evaluations will be carried out. More precisely, two internal, user evaluations will be organised at each case study site so as to evaluate models, tools and integration progress in a real-life yet controlled setting. The user groups and evaluation procedures will be planned in accordance with each site requirements.

## 8. Conclusions

**transLectures** is a FP7 project aimed at developing innovative, cost-effective solutions to produce accurate transcriptions and translations in large, Matterhorn-related repositories of video lectures. In this paper, we have described its case studies, user requirements, first Matterhorn integration steps and evaluation plans, and also we have taken a peek at the implementation of transLectures for the poliMedia case study.

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## **Unleashing the results of EU funded projects**

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### **1. Openness in grant programmes: state-of-the-art**

Collaboration between various actors, deriving from various contexts, has been a crucial part of EU development. Beneficiaries from the education sector taking part in many funding opportunities face the challenge of working together with partners representing different cultures, education systems and policies. However, a part and parcel of any collaboration is a common understanding of the principles, and in case of the EU grants, sharing of the projects' results has been the one that always raises discussion among the partnership, especially when the private sector is involved. Although bilateral contracts need to define clearly IPR issues a common understanding of best-practices in sharing is often a matter of difficult negotiations setting a sharp borders between public and restricted access to the results.

We strongly believe that sharing projects results that are funded by public bodies as Open Educational Resources is crucial, fair and can lead to the increase in quality of projects' outcomes. The aim of the article is to justify the publication of the results of EU co-funded educational projects as Open Educational Resources (OER) that can be changed, re-used, adapted for different context and different needs.

AGH-University of Science and Technology has been involved in 10 EU-funded projects on e-learning, social learning, e-portfolio and open source since 2005. Our experience gained from collaboration with the partners from other EU countries shows that sharing knowledge between professionals with different background has great a potential, especially in the field (IT, education) where discrepancies between regions are major. Sharing is understood as an exchange of know-how during two important phases: projects' realisation and exploitation of the results once the external funding has ceased. These results encompass online courses, online learning/ teaching materials (e.g. manuals, guidelines, recommendations for educators, instructions) and applications, which, provided that are published as free resources with a right to adapt and change according to context and needs, have a great value for education.

The analysis of our experience from the last seven years shows that such an open perspective is not common among the institutions and organisations involved in EU educational programmes. Searching for potential partners in official and compulsory for consortia project's repositories (databases) ADAM and EVE proved that that in many cases access to projects' results is closed. Tangible outcomes, although publicly co-funded, are available only for the project's consortium even after the project ends which in fact makes any re-use or further development impossible. Labelling them with commons licences could increase sustainability of project outcomes and make further transfers possible.

Although ADAM and EVE databases have been launched by the European Commission to support dissemination and exploitation of the projects' results they do not solve visibility or transparency issues. Major funding schema for education - Lifelong Learning Programme - lacks recommendations for opening-up projects' resources and publishing them e.g. on Creative Commons licences. A quick scan of educational granting programmes shows that only in the 7th Framework Programme open access policy towards project outcomes was integrated into programme as a pilot practice ([http://cordis.europa.eu/fp7/find-doc\\_pl.html](http://cordis.europa.eu/fp7/find-doc_pl.html)).

However, there are a few national initiatives that already integrate open policy into the granting procedures in Poland. Ministry of Foreign Affairs within the programme Polska

Pomoc requires projects' results to be published on Creative Commons Attribution licenses. Similar regulation binds participants of the Orange Academy grant programme aimed at culture and media education launched 3 years ago by Orange Foundation. Also Ministry of Culture and National Heritage promotes publishing on open licences in its programme "Culture education" by granting additional points during evaluation of the proposals.

Despite these fragmented initiatives it is clear that the main challenge in national and international funded projects is the lack of a coherent policy towards exploitation of results that enables use and re-use of the products. Although Creative Commons licenses are acknowledged their implementation in current programmes is still in a pilot phase. The open approach is neither systematised nor horizontally used.

## **2. Why we should care about openness?**

Openness is a flagship approach in AGH-UST's educational policy and especially in software exploitation on the level of individual students, faculties and university. Naturally, open source software is widely used for development of the university's online learning environment since 2004 combining education and open approach. AGH-UST's VLE consists of Moodle LMS, Mahara for e-portfolio, WordPress for blogging. Last year OpenMeetings was integrated with Moodle and is now under testing for academic staff and students in order to be integrated as a default tool for videoconferences.

Notwithstanding, AGH-UST focuses also on educational resources. Creative Commons licences have been used for publishing and sharing EU projects' results since 2006 in e-portfolio project (<http://mosep.org>) and iCamp Project (<http://icamp.eu>). The major step was launching of Open AGH in 2010. The decision about opening this first Polish repository of open academic resources filled the gap between the need for sharing and the lack of a common academic space. What was our motivation?

We are convinced that the results worked out in the projects co-funded by the European Commission are common for all. Right to re-use projects' results on every fields of exploitation should be guaranteed for everyone. Our position stands along with the Polish Prime Minister who declared that "what was funded from public budget has to be available for free and for everyone in public Internet with a permission for further usage without any barrier". As the institution of higher education we consider educational projects as a great opportunity to share innovative teaching and learning practice from each other and to transfer this knowledge into local, national and cross-national context. Sharing is perceived as a natural next step in our activity as in the wider perspective can lead to some positive effects:

- increased searchability of project results;
- increased visibility of institutions and organisations with a specific background, competence and experience;
- efficient way of providing evidence for experience, skills and competencies of the institution;
- transparency of the results that allows for quality assessment and evaluation also after the funding;
- increased sustainability and scope of exploitation as each project's consortium is expected to sustain project results up to 3 or 5 years (depend of type of programme) after projects' funding.

## **3. Let's free results of the EU projects**

Our 7 years of experience in collaboration on the European scale show that the level of awareness about Open Educational Resources, copyright issues and Creative Commons varies between institutions, regions and countries. Below five tips for opening up the projects are presented:



Think ahead: while forming the initial ideas and partnership it is important to discuss the open licences for future project's results, such as Creative Commons. Matching them with a planned project's outcomes can widen the scope for innovative activities and tasks, especially in the areas of dissemination and exploitation. Also partners will be able to consider openness as a priority for their future work and prepare institutions for such an approach.

Start early: Once the funding is granted, the coordinating institution should immediately dedicate some time to OER introduction, ideas of Creative Commons and mechanism of licensing during kick-off meeting. The presentation should refer to the real outcomes and include both positive and negative aspect of CC. Also commercial use should be explained as very often it will be an issue for private sector partners.

Decision is yours: The decision about an open approach needs to be made at the very beginning of the project and preferably included in the official documentation, such as contracts. It is also important that consortium decides which products are to be published as OERs as there is no requirement to share all work with the others (eg. working documents, internal materials).

Consider differences: It is important to acknowledge differences between partners' countries in terms of culture, education or practice. In some cases those differences are so strong that can influence on our publishing policy within the project e.g. in some countries OERs are perceived as low quality materials, free courses are neglected by participants and open source software criticised as unreliable. In such cases decision about the right licence guarantees the flexibility of re-use for each partner and allows for commercial use of the online resources.

Technology: Creative Commons licence does not ensure complete openness. Legal solutions have to be supported by the use of open technology. Open formats guarantee re-use of content without any technical constraints.

#### **4. EU projects: Rip, mix, re-use**

In the Centre of e-Learning we take part in many international educational projects where resources such as guides, handbooks, online courses, applications are produced. We find it important to share them widely not only within university but also with a wider educational community. They are therefore translated, localised and widely distributed due to the open licences used.

e-Teacher project developed e-learning course for teachers and educators about online pedagogy and course design. The course was validated in Poland, UK and Estonia. In that time in Poland the course presented rather innovative approach because e-learning was understood as self learning materials without support from tutor and other learners. After pilot phrase we noticed great interests among teachers. It was a major motivation for us to localise the content and develop the course further. In a period of 5 years more than 20 editions of the course were run and every next edition was updated or changed. 3 years ago we published the course on Creative Commons BY-NC-SA as free Open Educational Resources reused for instance by Cracow University of Technology as educational offer for academic teachers. The knowledge we gained from course designing and online facilitation and used for creating advanced courses on innovative education, online design and tutoring which we include in university educational offer for teachers and academic staff who need methodological and technology support.

Our next project iCamp (<http://icamp.eu>) that forced and promoted open approach was aimed at creating an infrastructure for collaboration and networking across systems, countries, and disciplines in Higher Education. In project results virtual environment was created composed of various interoperable open source tools and platforms. The environment was compliant with an innovative pedagogical model built upon a social-constructivist approach. Teachers and learners involved in VLE and educational models validation we provided guidelines in a form of instructions and handbooks about social software which after project ends was translated into Polish and published on Creative Commons BY-NC-SA. Decision about licence chosen was made on the level of project consortium.

In iCamp project we become familiar with e-portfolio idea which effects in our next two projects. DEDICO project (<http://dedico-project.eu>) aimed at developing digital competencies through free and open source software where online course on using variety of tools as created and published on open condition. The content we re-use as learning materials in our other courses in a form of instructions and guides.

Second project, MOSEP (<http://mosep.org>), developed wiki-based training materials about e-portfolio for teachers to support them working with young people in 2006. The materials were translated into 6 languages and published on Creative Commons BY-SA during project period. As e-portfolio method was unknown at that time in Poland, open access to these materials was a way to raise the awareness among Polish teachers, trainers, careers advisers, students, etc. On the software level Mahara open source tool was adapted and later incorporated into AGH-UST's VLE.

The MOSEP materials were re-used on a variety of ways by the partners but also by educators from outside the consortium (online courses, workshops for teachers, publications, etc.). In effect it led us to transferring knowledge and experience from MOSEP to other countries. Since 2010 AGH-UST has been coordinating MAPPED (<http://mapped-project.eu>) project which is a transfer of innovative e-portfolio approach from Poland to Italy, Czech Republic and Turkey. The aim of the project is to develop online self-learning materials explaining how to use e-portfolio in professional development. On the level of consortium we have also made an agreement to publish the content on Creative Commons licence. We hope that openness as a positive virus also in this case will encourage creativity, put MAPPED results in new context and give it a new project life.

#### **\* Openness as a positive virus**

Creative Commons as international legal system of intellectual and copyright protection allows for re-using European projects results globally. Especially using Share Alike virus-condition for projects outcomes will widen the range of Open Educational Resources available for free for everyone. We strongly believe that open publishing is a right thing to do. Our observations show that overall attitude towards Creative Commons and OER in European projects is positive. Enhancing open approach in project is a matter of good explanation, showing positive aspects on the level of grant requirements (better exploitation and dissemination) as well as outside the consortium. The strength that stands behind the idea of OER is strength of people who by individual or group activities will develop open content.

## **Using Online Synchronous Interviews to Explore the Workflows, Barriers and Benefits for OER Practitioners. (Poster 312)**

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### **Abstract**

Much of the literature on openness in education to date has focused on licensing and access issues rather than on the concrete workflows that instructional designers, learning technologists, academic authors and others have used when creating and/or releasing OER. Workflow models are the tools, technologies, processes and practices that individuals and teams working with OER engage with.

This small-scale research project looks at the workflows of OER practitioners focusing on the barriers they face to releasing open content as well as the range of benefits they perceive to have gained by working with OER. In August 2011 I carried out ten semi-structured interviews with academics, learning technologists and librarians involved in UK-OER projects. The interviews were carried out online, in real-time, using web conferencing software.

The study found that individuals and teams used a variety of OER workflows ranging from formal and structured models to informal and ad hoc models. Participants identified a number of barriers to releasing open content including a lack of institutional awareness and support, and issues relating to copyright. On the other hand they recognised a range of benefits associated with working with OER such as learning new skills, professional and scholarly development opportunities, and being a member of a community of practice built around an ethos of sharing.

### **Keywords**

Open educational resources (OER); OER workflows; online synchronous interviews; qualitative research; web conferencing; barriers; benefits.

### **Introduction**

Although still a fledgling movement the last five years or so has seen an increasing academic focus on open educational resources (OER) with the research literature coalescing around five broad themes: (a) histories, definitions and OER project overviews (Wiley and Gurrell, 2009), (b) sustainability and funding models (Downes, 2007), (c) the benefits afforded by OER as well as the challenges surrounding institutional acceptance and uptake (Yuan, MacNeill and Kraan, 2008) (d) the impact of OER on users, including the potential to widen educational access and participation (McAndrew and Cropper, 2010; Lane, 2008), and (e) legal, intellectual property and licensing issues (Bissell, 2009; Rossini, 2010).

At the same time relatively little attention has been paid to what could be argued is a key ingredient in the successful adoption of OER on an institutional and societal level — the workflow processes involved in the creation and repurposing of OER and the enablers and constraints that OER practitioners experience while working with these models. By workflow models I am referring here to the tools (including software), practices, processes and interactions with members of an OER team, that are usually embodied in a series of distinct stages that are followed in order to create OER either ‘from scratch’ or using existing content. These stages may include such decisions as which open license to attach to an OER, who to involve in the validation and quality assurance process and which pedagogical model or

theory of learning and learning design guides the workflow.

Such a research focus is beneficial for three main reasons:

1. It can uncover some of the barriers and hurdles that educators at the chalkface of OER production experience when faced with institutional demands for creating high quality, open, digital learning materials. These might range from cultural issues such as working with others who may be unaware of the benefits of OER, to technical issues including which software tools best fit into the OER workflow;
2. By focusing on the workflow practices of learning technologists, academics, librarians and others caught up in the everyday practices associated with OER creation and release, we can ask important questions regarding the benefits and critical enablers of working with OER on both an individual and institutional level;
3. Finally, and importantly for the purposes of this study, focusing on workflow processes, and the experiences of the people involved in them, forces us to question what a truly open learning design workflow for the creation of OER might look like. A key aim of this study, therefore, is to attempt to uncover some of the attitudes, assumptions and concrete practices experienced by OER creators and in doing so make explicit any barriers to the open design of OER (Conole, 2011).

## **Methodology**

One approach to researching OER workflow models would have been to use an online survey or questionnaire delivered to a large random sample of institutions and individuals. Such a method might have yielded valuable data. Indeed, it might have given a good indication of the range of workflow models in use in the OER community and might have enabled us to systematically compare them, for example to see which models were best suited to particular institutional and cultural arrangements.

However, such a quantitative approach would have told us little about the stories and concrete practices of those involved in the OER community, how they came to be involved in working with open educational content, and their accounts of the barriers and difficulties they faced when using different workflow models to release open content. It would also have told us little or nothing about the subjective meanings and motivations of these OER practitioners.

A qualitative approach, on the other hand, foregrounds both process and meaning (Bogdan and Biklen, 2003). In relation to OER it enables us to question some of the taken for granted assumptions about what it means to create educational resources that are released as open content, potentially opening up what could be seen as the 'black box' of decisions, negotiations, interactions and choices that accompany a particular OER workflow model. In this respect, by employing a qualitative methodology I am attempting to understand the meanings that OER practitioners bring to their workflows through social interaction with tools (including software), technologies and other social actors.

Burton, Brundrett and Jones (2008:83) identify four types of interviewing: face-to-face, telephone, online (e.g instant messaging or email interviews) and video (or web) conferencing . All have advantages and disadvantages, however, a number of practical reasons led me to choose synchronous web conferencing as my interview method. One advantage of using synchronous online interviews was that they enabled me to engage with geographically dispersed people involved in OER projects across the UK. This cut down substantially on cost and time which would have been prohibitive had I conducted the interviews face-to-face. This is a major advantage of using internet tools in qualitative research (Mann and Stewart, 2000: 20). Furthermore, although Burton, Brundrett and Jones (2008: 84) warn that using video conferencing software as a research tool can be both expensive and present significant technological barriers to participants, my job role as a learning technologist meant that I already had a good level of expertise in the use of web conferencing tools, having used them

in a variety of teaching, learning and administrative situations. This meant that I was able to exploit the affordances of what has been called this “novel and innovative approach to virtual data collection” (O’Connor et. al., 2008: 271).

A further reason for choosing online synchronous interviews over their asynchronous counterparts such as email or discussion forums is that they provide a closer approximation to a face-to-face environment, particularly with the increasing availability of relatively cheap and powerful web conferencing software and fast internet connections. A synchronous web conferencing environment, for example, enables responses in real time. Although some researchers have argued that this could be a disadvantage compared to an asynchronous environment where respondents have time to think about and prepare their responses (James and Busher, 2006), others have made the point that this is outweighed by the spontaneity and visual clues afforded by web conferencing as well as the ability of the interviewer to follow up questions by probing more deeply for information (O’Connor et. al. 2008).

### **Data Collection**

I contacted potential interviewees using three methods. Firstly I drew up a list of thirty individuals working on UK funded OER projects that I had met or heard speaking at OER academic conferences over the past year, or had come into contact with on the internet or through my involvement with the OSTRICH OER project. I sent direct emails to these individuals inviting them to participate in my online interviews. Secondly I used a series of requests via the social networking service Twitter spaced out over the period of one week, using the Twitter hashtags #oer and #ukoer. Finally I submitted a post on JISC’s ‘OER-DISCUSS’ mailing list which has 199 subscribers who are part of the OER community, inviting potential participants to contact me, using similar wording to the invitation email sent directly to potential participants.

Interviews took place with ten OER practitioners using *Blackboard Collaborate* web conferencing software. This and similar software is ideal for online synchronous interviews as it combines video, audio, instant chat and virtual whiteboard functionality in a relatively user-friendly interface. Before the formal part of the interview started I explained to the interviewee how to use the basic features of the software, in particular where the microphone button was located. I introduced myself, my job role, the purpose of my research and checked again that the participant was willing to have the session recorded for later transcription. I used the whiteboard to display each of my questions, having pre-loaded each question before the start of the interview. I also used a diagram of an OER workflow on one of the slides to act as a prompt for discussion. Despite the fact that each interview was recorded (and stored on the Blackboard servers) I also took brief handwritten notes, noting any difficulties or issues at the start of, and during, the interview. I kept my video turned on throughout in an attempt to replicate as far as possible the face-to-face interview, although in the event, only four of my participants chose to do the same.

Using real-time technology to mediate research interviews necessarily involves a double expectation; on behalf of the interviewer that they are technically adept at using the chosen software, and on behalf of participants that they are helped to achieve the required level of technical expertise to use the software competently (Mann and Stewart, 2000: 133). In my case I was fortunate that all my interviewees were already technologically adept with using web conferencing software, but even though this was the case I still ensured adequate preparation in the form of crib sheets and pointers to online resources where participants were encouraged to test their audio and video settings before the online interview. Nevertheless, there were still one or two occasions when the audio quality was poor which made transcribing the interview an almost impossible task. In the event I relied on my detailed notes to ‘fill in the gaps’ until the sound quality improved enough to resume transcribing from the

recording. It is likely that planning for unforeseen circumstances like this will continue to be important until web conferencing software and internet bandwidth develop sufficiently such that the mediating technology becomes practically invisible to the end user.

## **Findings**

There are three key themes that emerged from an analysis of my interview data. These are (a) the different workflow models in use by OER practitioners, (b) the barriers faced by OER practitioners when working with these workflow models, and (c) the benefits perceived by OER practitioners of working with OER.

### *Workflows*

A range of workflow models were identified by participants, ranging from the formal and structured, to the more informal and ad hoc. At the formal end of the spectrum was the highly centralised production workflow used by the Open University which had developed out of many years of offering distance learning materials to large numbers of students in the UK and globally. Other workflow models were less formal but still with an identifiable structure. For example the University of Nottingham's '6C Model,' used to produce OER for its U-Now OpenCourseWare initiative, followed a similar structure to the University of Leicester's CORRE model but with more flexibility. One participant described it as

... more of a representation of the process we go through rather than a rigid 'step 1 do this, step 2 do this.' So we do have one [a workflow model] but its designed not that you must do this and this in a particular order, system, that we follow rigidly. It is more fluid than that. (*Participant 1*)

At the other end of the scale from the centralised, structured OER workflows are the more decentralised, ad hoc models which tend to be characteristic either of institutions where large amounts of funding for OER is not available, or individuals working to produce OER by themselves, outside of a formal OER team. In the latter case these individuals are often required to develop a range of skills including multimedia creation, awareness of copyright issues and learning design experts.

### *Barriers*

Staff awareness of OER and its uses varied significantly amongst the staff who the participants worked with in their institutions. For some, there was little resistance from staff and management to releasing educational content openly, and awareness and support was generally positive. For the majority, however, the lack of staff awareness and institutional support created significant barriers for the successful adoption of OER in their places of work. For some, this manifested itself as a concern that releasing materials openly would result in poorer quality resources, while for others there was a more general hostility, particularly from marketing departments and management teams, towards sharing content freely and openly.

Secondly, and related to cultural attitudes and awareness of OER, one of the biggest barriers faced was a general lack of awareness and understanding of copyright issues, both on an individual and institutional level. Partly, as one of the participants explained, this was to do with a lack of digital literacy or the skills, understanding and resources required to be able to confidently and competently release content openly. More specifically participants talked about how many staff still use Google images and other image sites to search for content to incorporate into their teaching and learning materials, without being aware of the copyright implications. Other issues raised by participants were the amount of time required to clear materials for copyright purposes, and the amount of red tape involved, particularly when working with organisations external to their host institution.

Time and associated resources and costs were a third major barrier that participants identified in the process of working with OER. Partly this was linked to intellectual property issues and

the often lengthy process of having to clear content for copyright. On an institutional level the issue of sustainability was raised by two participants in relation to the need to keep producing and releasing OER after project funding runs out. At most of the institutions represented, the way this is addressed is by continuing to release existing, legacy teaching and learning content openly rather than going down the path of creating existing OER materials from scratch, with the added cost implications involved. A number of participants also talked about the importance of embedding openness and OER into the mindsets of academics so that they are encouraged to create and release OER as part of their normal, everyday activities.

Finally, technical issues were identified by participants as a challenge to overcome. For some this meant the costs associated with purchasing licenses for software used to create OER and then the time required to learn to use the software. Because a key output for practitioners is the pedagogical quality of the OER produced, many look to include a wide range of interactive resources in their openly released content, in the words of one participant *“everything from online resources to Powerpoint, interactive activities, Flash animations, interactive virtual labs, and video”* (Participant 3). This meant that academics in particular often had to rely on learning technologists, instructional designers or multimedia experts to create the content for them. An associated issue was finding the right file format to make the open content available in. For large institutions with a diverse student base this means having to provide content in a wide range of different formats.

### *Benefits*

A wide range of benefits were identified, some general and altruistic and some very specific and personal in nature. Dealing with the latter first, a number of participants articulated how their involvement in OER project work had benefited their professional development as academics, learning technologists and project leaders. On the back of their involvement in OER projects, practitioners received personal and professional benefits such as more funding for project work, teaching fellowships and opportunities to disseminate their research and scholarship via academic conferences and publications. Other participants talked about how working with OER had introduced them to a whole new set of skills and knowledge including the ability to work with new software and learning technologies, and better awareness of intellectual property issues including open licensing and which Creative Commons license to chose when releasing content openly.

Related to this last point, a number of participants stated how they had benefited from meeting and working with different people, often across academic and disciplinary boundaries, and between institutions. There were numerous references to the advantages of working as part of an OER team, or working as part of a larger ‘OER community’ and being able to draw upon their expertise when needed. Other participants talked about the savings in time and money that other academics, as well as the institution, benefit from. For the academic, using openly licensed teaching and learning resources can free up time to focus on delivering a quality and personalised learning experience. This view goes against the view expressed by other participants that OER creation and release necessarily pose a barrier in terms of associated time and costs.

Lastly, participants identified their commitment to an ethos and culture of sharing and openness as a benefit. This is related to their perceived membership of an ‘OER community’ and is also tied in with a view, expressed by a number of participants, that freely and openly sharing knowledge lies at the very heart of the academic enterprise.

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## **Yesterday, Today and Tomorrow on OCW in Japan**

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### **Abstract**

JOCW (Japan OCW Consortium) was established with six universities in 2005 as a closed forum and in 2006 JOCW has been changed to an open organization for mainly universities who would like to launch OCW with nine universities and one national organization. In 2007 we enlarged its membership to private sectors and introduced annual fee system in order to ensure its financial structure. Now JOCW members are totally forty-three organizations, which are twenty-four universities, three NPOs and sixteen companies respectively. OCW courses distributed from all JOCW members were 153 courses at the beginning, 96 courses in Japanese and 57 courses in English respectively, and it became totally 1798 courses, 1523 courses in Japanese and 275 courses in English on November 2011.

According to the increase of published courses, it is expected for users to find out courses to be matched with needs. Actually monthly-visitors to the each university's OCW site was about sixty thousand per month at the beginning except abnormal big number caused by the media exposure, and it became five hundred thousands per month on November 2011.

We have carried out the public opinion poll concerning opening up of university lectures annually since first one in 2006. The poll was conducted as a form of Internet research, which was taken for twelve hundred examinees on the Internet to distribute questionnaire consist of thirty-seven questions. The summary of the survey results is described in this paper.

These results show the huge potential and expectations on OCW and we believe OCW could be the social infrastructure for life-long education. In order to realize it we have to make more promotions to the government and universities not joined yet and the public for practical use of OCW.

JOCW have had bi-annual meeting since 2006 and have jointly organized Asian OCW and Open Education conference since 2009, in Seoul 2009, in Taipei 2010 and in Tokyo 2011. Through these events we could share know-how and experiences each other and recently we started some joint projects in terms of advanced usage of OCW.

In this report we will explain the current situation and future plan on an example of the joint project among Asian countries.

### **Keywords**

OCW, JOCW, Regional Consortium, International Collaboration

### **History and Previous Challenges**

In Japan the very first official event on OCW was OCW-workshop in Mita, Tokyo jointly held by MIT and Keio University in November 2004. In that workshop more than ten major Japanese universities were invited and Prof. Shigeru Miyagawa of MIT gave comprehensive explanation on MIT OCW and we had deep Q&A session after his presentation. After the workshop top level consideration has been made in several universities and by the end of 2004 five universities have decided to start OCW officially and agreed to launch OCW site simultaneously. Finally six universities, which were Keio University, Kyoto University, Osaka University, Tokyo Institute of Technology, University of Tokyo and Waseda University decided to have a joint press conference on May 13, 2005 and agreed to announce

the establishment of the organization for OCW in Japan as well as the launching OCW site of each university with ten courses and more.

(Fig. 1 Press conference on May 13, 2005)

In 2006 JOCW hosted the Global OCW conference at Kyoto University on April 20, 2006. That conference was the first Global OCW Conference, held outside US. We had the press conference on April 20 with MIT at Kyoto University and announced the launch of OCW Consortium and extension of JOCW with newly joined three universities, Hokkaido University, Nagoya University and Kyushu University. In the press conference we also announced that JOCW would invite Japanese university who would like to launch OCW openly. Actually in 2006 six universities joined JOCW.



Fig. 1 Press Conference on May 2005

When we established JOCW in 2005, we had no special grant for this sake and payment for JOCW activity have shared among member universities. However total financial resources have been restricted and so in 2007 we decided to introduce membership fee system and invite companies related to the higher education field as affiliate members. And in order to make sure JOCW finance structure more we have introduced the special support program, which means additional annual dues for affiliate members. In 2008 we have got three companies joined the special support program. Nowadays total number of institutions of JOCW is forty-three, twenty-four universities, three non-profit organizations and sixteen companies respectively. The growth of members is shown in Fig.2.

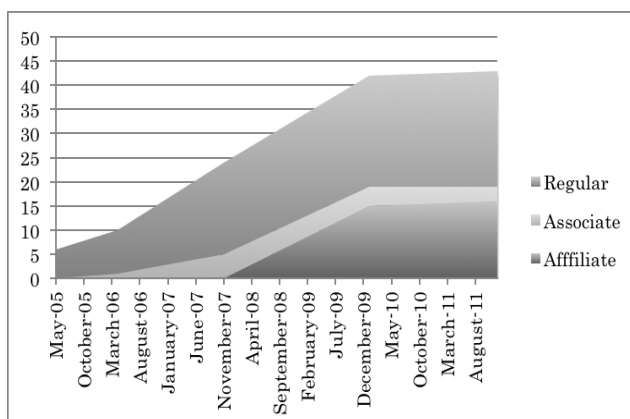


Fig. 2 Growth of JOCW members

### Opinion poll

JOCW have carried out public opinion poll annually since 2006 in order to get opinions from ordinal people regarding the opening up activities of universities. The poll was conducted as a form of Internet research, which was taken for twelve hundred examinees on the Internet to distribute questionnaire consist of thirty-seven questions. Main results are summarized as below.

1. More than 90% of respondents gave positive evaluation on opening up of lectures in universities.
2. Awareness of OCW is relatively low, only 30% of respondents knew opening up activities of some universities but the rate is gradually increasing.
3. Persons who have accessed OCW site for some university are only 5% but 60% answered that they would like to access those sites in future.
4. In 2009 most popular type of lecture information was syllabi and lecture notes but in 2010 more people selected lecture videos.

5. Ranking of discipline for OCW is Economics (30%), Letters (27-28%), Business administration (23-27%), Information science (22-25%), respectively.  
Main results of polls are shown in Fig.3a-3d.

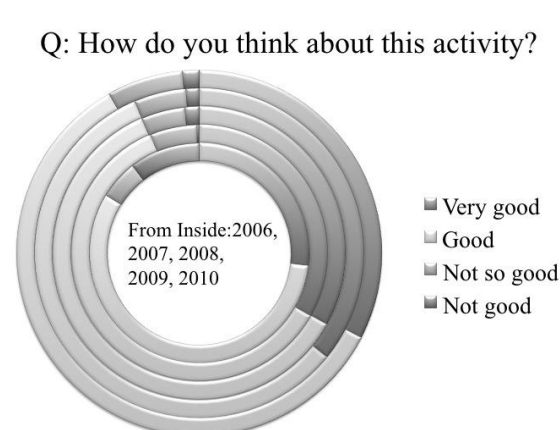


Fig. 3a Result of Poll -1-

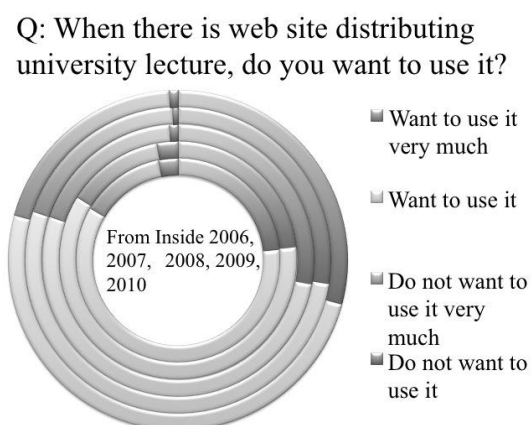


Fig. 3b Result of Poll -2-

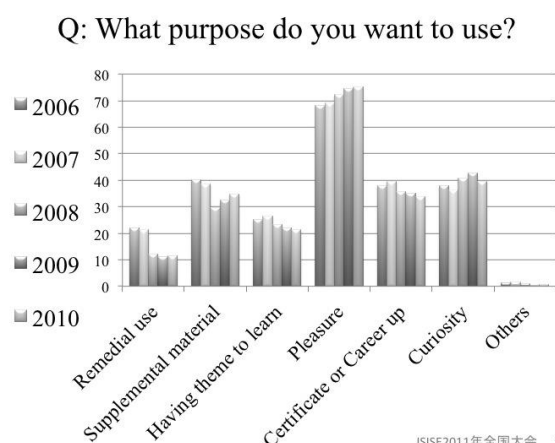


Fig. 3c Result of Poll -3-

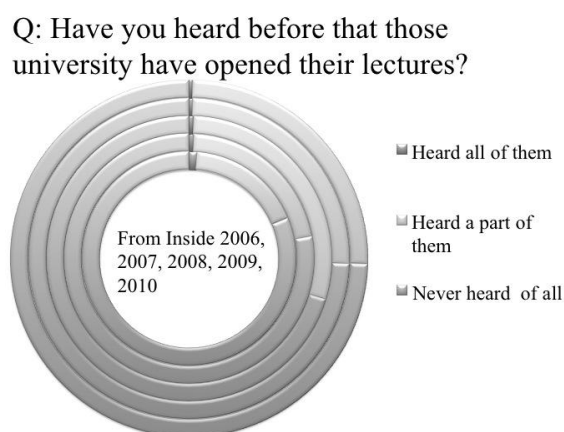


Fig.3d Result of Poll -4-

### International collaboration

OCW is essentially global activity and the Internet itself is global infrastructure. So there are many globally common aspects and many regionally specific matters as well. For example language barrier is a typical regional issue. Lectures of universities in each region are provided in language used in each region naturally. In order to get many accesses from all over the world, it is required to translate those lectures to the globally common language like English. But such task is very time and money consuming. In Asian region some regional consortia have been launched and made energetic activities. In 2008 JOCW agreed with KOCWC (Korea OCW Consortium) to create an opportunity to share regionally common issues and know-how to make OCW more popular and get correct understanding not only in each institution but also over several Asian countries. First event was the Asia Regional OpenCourseWare Conference 2009(AROC2009) in November, which was held at Korea University in Seoul, Korea jointly organized by JOCW. In 2010 TOCW (Taiwan OCW Consortium) joined as a member of stirring committee of the conference and they hosted the Asia Regional OpenCourseWare and Open Education Conference 2010(AROOC2010) at National Chao Tung University in Taipei, Taiwan in November co-organized by JOCW and KOCWC. In 2011 the Asia Regional OpenCourseWare and Open Education Conference 2011(AROOC2011) was held in Tokyo hosted by JOCW and Meiji University on November 7-8 with support from KOCWC and TOCW. Now one collaborative project among Korea

University and Meiji University is working in progress. This project is regarding OCW content mutual translation, supposed to be conducted between two universities in first phase, and to be extended to other member universities in both countries.

### **Perspective and Conclusion**

After decade has passed since the first MIT OCW has been launched. And at first most OCW sites published only text-based lecture notes, but nowadays many OCW sites provide lecture movies rather than text. And furthermore learning community has been adopted besides course content like MIT. Recently social learning is getting remarkable based on social networking boom using smart phone and tablets as well as PC. In that context it is no doubt that OCW must be getting important as high quality learning content.

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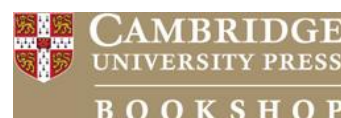
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